KAM
KPC-4
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Commands Manual

Kantronics

RF Data Communications Specialists

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The KAM, KPC-4, KPC-2400, KPC-2 and KPC-1 are Kantronics hardware and software designs incorporating the AX.25 Version 2 Level 2 Packet protocol as adopted by the American Radio Relay League. This manual contains information from earlier KPC-1, KPC-2, KPC-2400, KPC-4, and KAM manuals and addendums, modified as appropriate. In addition, Kantronics acknowledges the use of material from the original Tucson Amateur Packet Radio Corporation (TAPR) TNC-1 manual granted by OEM agreement.

We have attempted to make this manual technically and typographically correct as of the date of the current printing. Production changes to the TNC may add errata or addendum sheets. We solicit your comments and/or suggested corrections. Please send to Kantronics Inc., 1202 E. 23rd Street, Lawrence, KS 66046.

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Introduction to Commands

Some Abbreviations

Ctrl-x = Ctrl is the control key and x represents any alpha character. This is a two key combination. Press the Ctrl key and while holding it down type the letter x (this can be capital or lower case, but will be shown as capital). Release both. If your computer keyboard has no key labeled Ctrl, consult your computer manual to determine which key performs the control key function.

$ preceding a number denotes a hex number (base 16)

<CR> = carriage return, $0D, decimal 13, Ctrl-M

<LF> = line feed, $0A, decimal 10, Ctrl-J

I/O = Input/Output

Computer and terminal are used interchangeably to describe whatever device is attached to talk to the TNC.

Commands Structure

There are many commands which affect operation of the Kantronics TNCs. Some commands affect performance under specific conditions, some change parameters affecting general operation and others direct a one-time action.

The user changes parameters and issues instructions to the TNC by typing commands composed of English-like word abbreviations and variables which are numbers or strings of characters chosen by the user. You will probably never change some of these parameters.

Default values are stored in the EPROM and are the settings used at power-on. If you change any setting or value and PERM it, the new setting or value will be stored in the EEPROM and will be the value used at future power-on. Parameters which you change but do not PERM will revert to factory defaults at the next power on. A hard reset can be done to restore factory defaults, as described in the Installation Manual. If using the optional Battery Backup or SmartWatch all changed parameters are backed up immediately.

● Entry

A command is entered to the TNC by typing the command name and its argument (setting or value) in the Command Mode. The prompt for Command Mode is:

cmd:

The command and argument must be separated by a space, and the TNC takes action when a carriage return <CR> is typed. All command entries may be abbreviated to the shortest unique string. In the command list which follows, those required entries are denoted by capital letters.

You can examine the value of any parameter by typing the command name followed by a <CR>. A special command, DISPLAY, allows you to see the values of all parameters or groups of related parameters.

Once you go into Packet Convers Mode or WEFAX Mode a Ctrl-C (see COMMAND) needs to be entered to return you to the Command Mode. In the Packet Transparent Mode a special sequence is needed (see CMDTIME). In the KAM there are other modes from which you need to enter a Ctrl-C followed by the letter X to return to Command Mode.

If packets have been printing on the screen you may have forgotten which mode you are in. If you wish to see the cmd: prompt do a Ctrl-C, to be sure you are in Command Mode. If the prompt does not appear then you already are in Command Mode, just type a return if you wish to see the cmd: prompt.

● Format

All commands are listed alphabetically. On the first line of a command will be the command name followed by any arguments required. Any optional arguments will be shown in square brackets [ ]. If the command accepts several different values, or a range of values, the permissible arguments will be shown in parenthesis ( ). The permissible arguments may also be shown separated by a vertical bar | . At the far right of the first line will be the version number which introduced this command. The second line will show the default value, which TNCs this command applies to, and what modes of operation are affected by this command. Example:

> ● **COMmand** arguments (permissible arguments) version
> default   units   modes

If the command applies differently to different units, the unit names will be in italic and listed separately.

Parameter Types

● n (range)

Any number within the range is permissible. The unit of measure (seconds, ms, baud, count, etc.) for the number will be described in the description. These are decimal numbers.

● n ($00 - $FF)

Several parameters are numerical codes for characters which perform special functions. The code is simply the ASCII character code for the desired character. (See the ASCII Chart at end of this manual.) Most of these characters have control characters as default values. Control characters are entered by holding down a special control key on the keyboard while typing the indicated key. For example, to type a Ctrl-X, hold down the control key while typing an x, then release both keys. These special characters cannot be sent in a packet unless preceded by the pass character (see PASS) or unless you are operating in the Transparent Mode.

These numbers are shown in hexadecimal (hex) form (base 16). They can be entered either in decimal or in hex. A hex number is distinguished from a decimal number by preceding it with a "$" prefix. The "digits" of a hex number represent powers of 16, analogous to the powers of 10 represented by a decimal number. The numbers 10 through 15 are denoted by the hex digits A through F. For example:

$1B = (1*16) + 11 = 27

$120 = (1*16*16) + (2*16) + 0 = 288

Permissible values are shown as: (n = $00 - $FF). This is true if 8BITCONV is ON, as defaulted. If 8BITCONV is changed to OFF, then permissible values are $00 - $7F. See the ASCII Chart at the end of this book for character codes and hex/decimal conversion.

If a streamswitch (STREAMSW) character or any other special character is defined as "$" then you will need to enter values in decimal, or precede the $ with the PASS character in order to enter hex numbers.

● flags ChoiceA | ChoiceB

Many parameters are "flags", meaning they have two possible values, ON and OFF, or YES and NO. All of the command descriptions show ON and OFF as the options; however YES (y) and NO (n) may be typed instead. A few parameters are really flags, but rather than indicating that something is "on" or "off", they select one of two ways of doing things. Some of these parameters have the values EVERY or AFTER indicating operating modes for data transmission. The possible choices are separated by a vertical bar. Some of the flag parameters will allow many choices, such as ON | OFF | TO | FROM.

● callsigns xxxxxx-n

Several commands require callsigns as parameters. While these parameters are normally Amateur callsigns, they may actually be any collection of numbers and/or letters up to six characters; they are used to identify stations sending and receiving packets. A callsign may additionally include an "extension" (SSID, substation id), which is a decimal number from 0 to 15 used to distinguish two or more stations on the air with the same Amateur call (such as a base station and a repeater). The callsign and extension are entered and displayed as call-ext, e.g. KØPFX-3. If the extension is not entered, it is set to -0, and extensions of -0 are not displayed by the TNC.

● text

There are some commands which have a parameter text string. This string can be any combination of letters, numbers, punctuations, or spaces up to 128 characters. In order to be used all string parameters must contain at least one non-space character. You can even put characters with special meanings, such as carriage return, into the string by preceding them with the PASS character. The string ends when you type a (non-passed) carriage return.

● **dual port**

KAM and KPC-4 only. Some parameters can be set differently for the two radio ports. In the command descriptions, these parameters are indicated by two default settings separated by a slash, for example MAXFRAME 1/4. The first parameter is used for the HF radio port (or Port 1 on the KPC-4) and the second parameter is used for the VHF port (or Port 2 on the KPC-4). There are several ways these double parameters can be set.

MAX 2/3   sets HF (Port 1) Maxframe to 2 and VHF (Port 2) Maxframe to 3

MAX 4/   sets HF (Port 1) Maxframe to 4 and leaves VHF (Port 2) Maxframe unchanged

MAX /7   sets VHF (Port 2) Maxframe to 7 and leaves HF (Port 1) Maxframe unchanged

MAX 6   sets both HF (Port 1) and VHF (Port 2) Maxframe to 6

All commands having independent values for the HF (Port 1) and VHF port (Port 2) are set in the same manner except for HBAUD on the KAM (see HBAUD).

Commands

● **8bitconv** ON|OFF

default ON   All Units   All Modes

When ON, transmission of 8-bit data is allowed in the packet Convers Mode and ASCII Mode. If you wish to obtain 8-bit data transmission but do not want all the features of Transparent Mode, set this command to ON. This feature may be most useful for transmitting non-ASCII character sets. If OFF, the 8th data bit is stripped. This setting corresponds to the Word Length or Data Bits setting of your communications program. Some terminal programs will not operate properly with 8BITCONV ON. If your terminal operates properly in Command Mode (cmd:) and seems to quit working in Convers Mode then turn this parameter OFF.

See also: parity

● **ABaud** n   (n = 0, 300, 600, 1200, 1800, 2400, 4800, 9600)
      KPC-1 (n = 0, 300, 1200, 9600)

default 0   All Units   All Modes

The parameter n sets the baud rate used for input and output through the serial port of the TNC to the computer. If 0 is used, the TNC will run an autobaud routine upon power-up. This routine looks for a "*" character from the attached computer to set the ABAUD parameter. If you wish to use a different baud rate, or to perform autobaud every time the unit is powered up, you must change the ABAUD parameter before PERMing. If you change the baud rate in your computer or terminal you should change and PERM the baud rate in the TNC first, then issue the RESET command, then set the new baud rate on your computer. Otherwise a hard reset will be required to erase the ABAUD setting and reinitialize the TNC to perform the autobaud routine. (See Hard Reset section in the Installation Manual.) Note also that a hard reset will erase ALL stored parameters in your TNC and return it to factory defaults. If you have the Battery Backup or SmartWatch option, any change in ABAUD is stored automatically.

See also: perm, reset, restore

● **ALias** ON|OFF

default OFF   KPC-1/KPC-2/KPC-2400   Packet
default OFF/OFF   KAM/KPC-4   Packet

When ON, the callsign specified in MYALIAS can be used for digipeating.

See also: digipeat, hid, myalias

● **AMtor** [xxxx[xxx]] characters (or 4, 5, or 9 digits)

immediate   KAM   AMTOR

This command places the TNC in AMTOR Mode. Entering AMTOR xxxx[xxx], where xxxx[xxx] is a selcal, will place the TNC in AMTOR master mode, and the TNC will initiate an ARQ call. Entering AMTOR without xxxx[xxx] will place the TNC in standby mode for reception of either ARQ or Mode B (FEC or SELFEC) signals. You may initiate a Mode B (FEC) transmission by using the Ctrl-C directive followed by a letter T. ARQ signals received must contain the selcal you have entered in the MYSEL4 or MYSEL7 commands to be decoded.

See also: autostrt, canline, fec, lamtor, misschar, mysel4, mysel7, pmode, rephase, txdamtor, txdfec; Ctrl-C directives in the Directives section

● **ASCBaud** n (n = 20 - 500)

default 110   KAM   ASCII

This command sets the default ASCII baud rate used when entering ASCII mode with no baud rate specified. This baud rate is also used if PMODE is set to ASCII. While in ASCII Mode pressing Ctrl-C Ø will set the baud rate to that specified by ASCBAUD. FCC rules currently limit the baud rate at 300 when operating below 28 MHz.

See also: ascii; Ctrl-C n in the Directives section

● **Ascii** [n] (n = 20 - 500)

immediate   KAM   ASCII

This command places the TNC in ASCII Mode. The parameter n sets the transceiver baud rate. For example, use ASCII 150 if you wish to go on the air at 150 baud. When the n parameter is omitted, the value specified by ASCBAUD is selected. Commonly used standards are either 110 or 300. Selecting any other value requires that the station you are trying to communicate with have similar selection capability. FCC rules currently limit the baud rate at 300 when operating below 28 MHz.

See also: ascbaud, autostrt, canline, hbaud, pmode; Ctrl-C directives in the Directives section

● **AUtocr** n (n = 0 - 255)

default 72   KAM   RTTY/ASCII/AMTOR

A carriage return <CR> character is sent to the radio after n characters are typed in a line. For example, with n = 72 a <CR> is automatically sent after 72 other characters have been typed. The character count is reset to zero whenever a manual <CR> is sent from the keyboard.

● **AUTOLf** ONІOFF

default ON   All Units   RTTY/ASCII/AMTOR/Packet

When ON, a line feed is sent to the terminal after each carriage return. This parameter should be set on when overprinting occurs and the terminal being used does not automatically supply its own linefeed after a carriage return. This command affects only the data sent to the terminal, not data sent in packets.

See also: cr, lfadd

● **AUTOStrt** ONІOFF

default OFF   KAM   RTTY/ASCII/AMTOR

When ON and in RTTY/ASCII mode, the KAM will receive information only when preceded by the MYAUTOST. A series of four "N"s signifying end of message, or thirty seconds of no signal will cause the TNC to stop receiving data. No further information will be received until a new MYAUTOST activates it again.

When ON and in FEC mode, only AMTOR SELFEC (Selective FEC) messages beginning with the MYSEL4 or the MYSEL7 will be received. Loss of lock will cause the TNC to stop receiving data. No further information will be received until a new MYSEL4 or MYSEL7 activates it again.

See also: myautost, mysel4, mysel7

● **AX25l2v2**   ON I OFF

default ON	KPC-1/KPC-2/KPC-2400	Packet
default ON/ON	KAM/KPC-4	Packet

This command provides compatibility with all known packet units implementing AX.25 protocol. When ON, Level 2 Version 2 protocol is implemented and the TNC will automatically adapt to whichever version the connecting station is using. When OFF, Level 2 Version 1 is implemented. Set this command to OFF if you need to digipeat through other units which do not digipeat version 2 packets. You may also find benefit from setting this command OFF when using several digipeaters (not nodes) to send packets, or when conditions are marginal between the two stations involved. (NOTE: Changing this setting after connecting to another station will have no effect on the current connection.)

The major difference in V1 and V2 protocol is the method used to handle retries. In the connected mode, if a packet is sent and not acknowledged, Version 1 will resend the entire packet and then disconnect if the RETRY count is reached. Version 2 will first send a poll, the response to this poll will determine if the packet was received. It is possible that the ack was collided with and therefore the packet does not need to be resent. If the packet was not received it will be re-transmitted. Each time a poll is answered the RETRY count is reset to 0. If the RETRY count is reached, Version 2 will attempt to re-connect unless RELINK is OFF. If the re-connect attempt is unsuccessful, then Version 2 will issue a disconnect.

See also: relink, retry, tries

For more information the book *AX.25 Amateur Packet-Radio Link-Layer Protocol Version 2.0 October 1984,* can be obtained from the ARRL.

● **AXDelay**   n   (n = 0 - 255)

default 0	All Units	Packet

Each increment specifies 10 millisecond intervals. This value specifies a period of time to wait, in addition to TXDELAY, after keying the VHF transmitter before data is sent. This delay can be helpful when operating packet through a standard "voice" repeater, or when using an external linear amplifier which requires extra key-up time. Repeaters using slow mechanical relays, split-sites, or both require some amount of time to get RF on the air. Note: This command does not apply to the HF port in the KAM.

● **AXHang**   n   (n = 0 - 255)

default 0	All Units	Packet

Each increment specifies10 millisecond intervals. This value may be used to improve channel utilization when audio repeaters with a hang time greater than 10 msec are used. If the repeater squelch tail is long, it is not necessary to wait for AXDELAY after keying the VHF transmitter if the repeater is still transmitting. If the TNC has heard a packet within the AXHANG period, it will not add AXDELAY to the keyup time. Note: This command does not apply to the HF port in the KAM.

● **Beacon** (Every | After) n   (n = 0 - 255)

default Every 0	KPC-1/KPC-2/KPC-2400	Packet
default Every 0/Every 0	KAM/KPC-4	Packet

Each increment specifies 1 minute intervals. A value of 0 turns the beacon OFF. Setting a value greater than 0 activates the beacon under the conditions specified. If the optional keyword Every is used, a beacon packet will be sent every n minutes. If set to After, a beacon packet will be sent ONCE after the specified interval with no channel activity.

The beacon frame consists of the text specified by BTEXT in a packet addressed to "BEACON". Beacon messages will be digipeated via any addresses specified in the UNPROTO command.

See also: btext

● **BKondel** ON | OFF

default ON	All Units	All Modes Except Wefax

When ON, the sequence backspace-space-backspace is sent when the DELETE character is entered. When OFF, the backslash character "\" is sent to the terminal when the DELETE character is entered.

See also: delete, redisplay

● **BText** text (0 - 128 characters)

default (blank)	All Units	Packet

BTEXT specifies the content of the data portion of the beacon packet. Any combination of characters and spaces may be used with a maximum length of 128. Entering a single "%" will clear BTEXT.

See also: beacon

● **BUDCalls** [+ | -]callsign(s) or NONE

default NONE	All Units	Packet

A list of up to 10 callsigns for use with BUDLIST or CONLIST. To delete or add individual entries precede the callsign with a "-" or "+" respectively. For example to delete WDØEMR type BUDC -WDØEMR.

See also: budlist, conlist

● **BUdlist** OFF(NO,NONE) I TO I FROM I BOTH(ON,YES)

default OFF   KPC-1/KPC-2/KPC-2400   Packet

default OFF/OFF   KAM/KPC-4   Packet

When OFF, BUDLIST will allow monitoring of all packets even if the BUDCALLS list has callsigns in it. When BOTH or ON, only those stations whose calls are listed in the BUDCALLS will be monitored. Packets addressed to or from those callsigns will be monitored. If BUDLIST is TO, only those packets addressed to a station in the BUDCALLS list will be monitored, those from that station will not be monitored. When set to FROM, those packets from the stations in BUDCALLS will be monitored, but not those packets addressed to the BUDCALLS list. Note that suppressed calls (see SUPLIST) take precedence over BUDLIST. For instance if you have WØABC in your SUPCALLS with SUPLIST TO, and you have WØDEF in your BUDCALLS with BUDLIST BOTH, then packets from WØDEF to WØABC will NOT be monitored.

See also: budcalls, monitor, suplist

● **CAlibrat**

immediate   All Units

The CALIBRATE command is used to generate a square-wave signal which may be used as an aid in tuning the transceiver for operation with the TNC. Use of this command is explained in the Calibration/Equalization Section of the Installation Manual. The letter "X" will return you to Command Mode.

● **CANline** n (n = $00 - $FF)

default $18 (Ctrl-X)   All Units   All Modes Except Wefax

This command is used to change the cancel-line input editing command character. When in Convers or Command Mode entering a Ctrl-X will cancel all characters input from the keyboard back to the last un-PASSed carriage return (unless PACTIME has expired and CPACTIME is turned on).

When using the KAM in any mode except packet, typing the CANLINE character will clear the transmit buffer – that is, all characters waiting to be transmitted, which have not yet been sent, will be discarded.

See also: canpac, cpactime, pass

● **CANPac** n (n = $00 - $FF)

default $19 (Ctrl-Y)   All Units   Packet

This command is used to change the cancel-packet command character. When in the Convers Mode entering a Ctrl-Y will cancel all keyboard input back to the last unpassed SENDPAC character (unless PACTIME has expired and CPACTIME is turned on).

This character also functions as a cancel-output character in Command Mode. Typing the cancel-output character a second time re-enables normal output. For example, if you've told the TNC to do a DISPLAY, a Ctrl-Y will stop the display and a second one re-enables the cmd: prompt after the next <CR>.

See also: canline, cpactime, sendpac

● **CCitt** ON | OFF

When ON, the European RTTY code (ITA2) is used in the RTTY Mode. This code differs from US TTY codes in the following four characters:

ITA2	US TTY's
BELL	'
'	BELL
+	"
=	;

When OFF, standard Bell 103 or Bell 202 tone pairs are selected. When ON, the CCITT v.21 or v.23 tone pairs are selected. The specific pairs are determined by the settings of the HF and HFTONES commands. The following chart shows the relationship of these three commands:

CCITT	HF	HFTONE	TONE PAIR
off	off	off	1200/2200 (Bell 202)
off	off	on	1200/2200 (Bell 202)
off	on	off	1070/1270 (Bell 103)
off	on	on	2025/2225 (Bell 103)
on	off	off	1300/2100 (CCITT v.23)
on	off	on	1300/2100 (CCITT v.23)
on	on	off	980/1180 (CCITT v.21)
on	on	on	1650/1850 (CCITT v.21)

See also: hf, hftones

● **CD**   INTERNAL I EXTERNAL I SOFTWARE   v3.0
default INTERNAL   All Units   Packet

When set to INTERNAL, the TNC will detect a signal present on the frequency based on the method used by the attached modem. This is normally an energy type carrier detect, allowing shared voice and data on the same channel.

When set to EXTERNAL, the carrier detect is supplied by an external device, connected to the XCD pin on the radio port.

If set to SOFTWARE, the firmware inside the TNC will detect the presence of data to enable the carrier detection, allowing operation with un-squelched audio. Correct operation of SOFTWARE detect is affected by proper equalization and the SWP parameter. If your RCV light flickers, this is an indication that you may need to adjust the equalization. On the KPC-2, KPC-2400, and KPC-1 this is a software command (EQUALIZE). The KAM and KPC-4 have internal jumpers to set the equalization (see Calibration/Equalization section of the Installation Manual).

When operating RTTY and ASCII, the KAM will use only INTERNAL or EXTERNAL. If this command is set to SOFTWARE, the KAM will act as though it were set to INTERNAL when in RTTY and ASCII modes.

KPC-2400

Another option is available for the KPC-2400, namely 2400. When set to 2400, the KPC-2400 will use the carrier detect circuit of the 2400 b/s modem, even when other speeds are selected by the HBAUD command. During 2400 b/s operation, the CD setting is ignored, and the 2400 b/s carrier detect is utilized.

See also: swp

● **CHeck**   n   (n = 0 - 255)
default 0   KPC-1/KPC-2/KPC-2400   Packet
default 0/0   KAM/KPC-4   Packet

Each increment of check is 10 seconds. If n is greater than 0, then a periodic check (poll) will be made to determine that a connected state still exists when no activity has occurred for n * 10 seconds. This prevents "hang-up" in a connected mode when a link failure occurs as a result of conditions beyond control of the connected stations. If n equals 0 then this timeout function is disabled. If using version 1 (AX25L2V2 OFF), a check timeout will initiate a disconnect.

See also: ax25l2v2, kntimer, relink, rnrtime

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● **CMdtime** n (n = 0 - 15)

default 1   All Units   Packet

Each increment specifies 1 second intervals. This command sets the time allowed for entry of required characters to escape the Transparent Mode. In order to allow escape to Command Mode from Transparent Mode, while permitting any character to be sent as data, a guard time of CMDTIME seconds is set up. After a delay of CMDTIME since the last data characters were sent to the TNC, three COMMAND characters must be entered within CMDTIME of each other. After a final delay of CMDTIME the TNC will exit Transparent Mode and enter Command Mode. At this time you should see the cmd: prompt. If CMDTIME is set to zero, the only exit from Transparent Mode is a modem break signal. Example (if CMDTIME is 1 second and COMMAND is Ctrl-C): wait one second, type a Ctrl-C, within one second type a second Ctrl-C, within one second type a third Ctrl-C, WAIT one second, cmd: prompt should appear. If your computer/program has the capability you can also send a modem break to escape Transparent Mode.

See also: command, trans

● **CMSg** ON I OFF I DISC I PBBS

default OFF   KPC-1/KPC-2/KPC-2400   Packet
default OFF/OFF   KAM/KPC-4   Packet

When OFF, the custom connect text stored in CTEXT will not be sent to the connecting station upon receiving a connect request. When ON, the custom string will be sent. When CMSG is set to DISC, the custom text will be sent to the connecting station, and then your TNC will disconnect from that station. If set to PBBS, the custom text will be sent to the connecting station, and then the connection will automatically be transferred to your PBBS. This will occur if the PBBS is available. If the PBBS is not available, your TNC will disconnect from the station. CTEXT must contain text (spaces only is not considered text) in order for the DISC and PBBS functions to operate.

See also: ctext, pbbs

● **COMmand** n (n = $00 - $FF)

default $03 (Ctrl-C)   All Units   All Modes

This command is used to change the Command Mode entry character. When COMMAND is set to the default value, typing a Ctrl-C causes the TNC to return to Command Mode from packet Convers Mode. (See CMDTIME for returning to Command Mode from Transparent Mode.) This character is also used for special commands in non-packet mode.

See also: Directives section

● **CONList** ON I OFF   v2.84

default OFF   KPC-1/KPC-2/KPC-2400   Packet
default OFF/OFF   KAM/KPC-4   Packet

When ON, the TNC will recognize only those packets received with a callsign that also appears in the BUDCALLS list. All other packets are completely ignored. In other words, if a station is not in the BUDCALLS list, he may not use your station for ANY purpose, including digipeating through you. In addition, you will not be able to connect to any station that is not in your BUDCALLS list.

See also: budcalls

● **CONMode** (Convers I Trans)

default Convers   All Units   Packet

This command controls the mode the TNC will be placed in AUTOMATICALLY after a connect if NOMODE is OFF. The connect may result either from a connect request received or a connect request originated by a CONNECT command. If the TNC is already in Convers or Transparent Mode when the connection is completed, the mode will not be changed. If you have typed part of a command line when the connection is completed, the mode change will not take place until you complete the command or cancel the line input.

See also: canline, connect, convers, nomode, trans

● **Connect** call 1 [VIA call 2, call 3, ...call 9]

immediate   All Units   Packet

call 1 = callsign of station to be connected to.

call 2 ... call 9 = optional stations to be digipeated through. A maximum of 8 digipeater addresses (callsigns or aliases) can be specified. This is referred to as a path.

Each callsign may also have an optional supplemental station identifier (SSID) specified as -n, where n = 1 - 15. The digipeat callsigns are specified in the order in which they are to relay transmitted packets. The mode set by CONMODE will be entered upon successful connect, if NOMODE is OFF. If no response to the Connect request occurs after RETRY attempts, the command is aborted. A timeout message is printed on the display and the TNC remains in the Command Mode. The station being connected to (call 1) may receive the connect request but be unable to accept connects, in which case a busy message will be printed to the screen and the TNC will stay in Command Mode. Connect requests may only be initiated in the Command Mode and the connect will be established on the stream you are on.

If CONNECT is entered with no parameters, the status of the current stream is displayed.

See also: conmode, conok, maxusers, nomode, retry, ring, streamsw, xmitok

● **CONOK** ON/OFF

default ON   All Units   Packet

When ON, connect requests from other TNCs will be automatically acknowledged and a <UA> packet will be sent. The standard connect message, with stream ID if appropriate, will be output to the terminal and the mode specified by CONMODE will be entered on the I/O stream if you are not connected to another station and NOMODE is OFF.

When OFF, connect requests from other TNCs will not be acknowledged and a <DM> packet will be sent to the requesting station. The message "connect request: (call)" will be output to your terminal if INTFACE is TERMINAL.

When operating with multiple connects allowed, the connection will take place on the next available stream. Connect requests in excess of the number allowed by the USERS command will receive a <DM> response and the "connect request: (call)" message will be output to your terminal if INTFACE is TERMINAL.

See also: conmode, connect, intface, maxusers, monitor, nomode, users

● CONVers

immediate   All Units   Packet

CONVERS has no options. It is an immediate command and will cause entry into Conversational Mode from Command Mode on the current I/O stream. Any link connections are not affected.

See also: k, command

● CPactime   ON|OFF

default OFF   All Units   Packet

When OFF and in the Convers Mode, packets are sent when the SENDPAC character is entered or when PACLEN is achieved. When ON and in the Convers Mode, packets are sent at periodic intervals determined by PACTIME. Characters are sent periodically as in Transparent Mode but the local editing and echoing features of Convers Mode are enabled. CR should normally be OFF in this configuration, otherwise the SENDPAC character is appended at random intervals as the input is packetized by the timer.

See also: convers, cr, paclen, pactime, sendpac, trans

● CR   ON|OFF

default ON   All Units   Packet

When ON the SENDPAC character (normally carriage return) is appended to all packets sent in Convers Mode. Setting CR ON and SENDPAC $0D results in a natural conversation mode. Each line is sent when a <CR> is entered and arrives at its destination with the <CR> appended to the end of the line. To avoid overprinting, AUTOLF may need to be ON at the receiving end.

See also: autolf, lfadd, sendpac

● CRAdd   ON|OFF

default OFF   KAM   RTTY/ASCII/AMTOR

When ON, a <CR> character is added to any <CR> character sent to the radio. This is to allow a <CR>, <CR>, <LF> sequence.

● CRLfsup   ON|OFF

default OFF   KAM   RTTY/ASCII/AMTOR

When ON, extra <CR> and <LF> characters following a <CR> are not sent to the terminal.

● CStamp   ON|OFF

default OFF   All Units   Packet

When ON, the daytime stamp is printed with all "*** CONNECTED TO" and "*** DISCONNECTED" messages on the terminal.

See also: connect, daytime, disconnect, mstamp

● **CText** text (0 - 128 characters)
default (blank)   All Units   Packet

Enter any combination of characters and spaces up to maximum length of 128. Entering a single "%" will clear CTEXT. This entry specifies the text of the first packet to be sent in response to an accepted connect request provided that the parameter CMSG is not OFF.

See also: cmsg, connect

● **CW** [n] (n = 5 - 99)
immediate   KAM   CW

This command sets the TNC in CW Mode with a morse code speed of n words per minute. For example, use CW 30 to set a transmit CW speed of 30. Also, when receiving CW, estimate the speed and then enter CW with that speed. For example, if the code sounds like 20 WPM, then enter CW 20. Auto ranging for CW speed tracking is ±20 WPM from the speed selected. If no value is entered for n, the speed specified in CWSPEED will be used.

See also: canline, cwspeed, pmode; Ctrl-C directives in Directives section

● **CWBand** n (n = 10 - 1000)
default 200   KAM   CW

This command sets the bandwidth of the TNC input filters for CW in Hertz. A small bandwidth will be harder to tune, but copy will be better.

● **CWID** (Every | After) n (n = 0 - 255)   v2.85
default Every 0   KPC-1/KPC-2/KPC-2400   Packet/KISS
default Every 0/Every 0   KAM/KPC-4   Packet/KISS

Each increment specifies 1 minute intervals. A value of 0 turns the ID OFF. Setting a value greater than 0 activates the ID under the conditions specified. If the optional keyword Every is used, an ID will be sent every n minutes. If set to After, an ID will be sent ONCE after the specified interval with no channel activity. The callsign specified by the MYCALL command will be sent in CW using AFSK tones. Some countries require all stations to ID in Morse code periodically.

See also: mycall

● **CWSpeed** n (n = 5 - 99)
default 25   KAM   CW

This command sets the default Morse code speed used when entering the CW Mode with no parameter. This speed is also used if PMODE is set to CW.

See also: cw

● **CWTone** n (n = 50 - 2000)
default 750   KAM   CW

This command sets the CW filter center frequency (in Hertz) for receiving CW.

● **DAytime** yymmddhhmmss

<p style="text-align:center">All Units</p>

<p style="text-align:right">Packet</p>

If the parameter yymmddhhmmss is present, the software clock/calendar is set for MHEARD and NDHEARD logging, and, CSTAMP and MSTAMP functions. When entering the daytime digits, enter in pure number sequence with no spaces, dashes, or slashes. For example: 860102223000 would indicate 1986, January 2, at 22:30:00 hours. If DAYTIME is entered with no parameter the daytime is displayed in a form depending on the setting of the DAYUSA flag. If the SmartWatch option is installed a setting of DAYTIME 000000000000 will turn it off.

See also: cstamp, dayusa, mheard, mstamp

● **DAYTWeak** n (n = 0 - 15)

default 8   All Units   Packet/WEFAX

This parameter is used to tweak the clock for accurate time keeping. Increasing the parameter will slow the clock, decreasing the parameter will speed up the clock. Each count corresponds to .85 seconds increase or decrease per day. Ambient temperature will affect the clock to some degree.

If WEFAX pictures are skewing, use this command to adjust the clock speed of the TNC.

● **DAYUsa** ON|OFF

default ON   All Units   Packet

When ON, the daytime stamp is displayed in the form common in the USA: month/day/year. When OFF, the daytime stamp is displayed in the form common in Europe: day/month/year.

See also: daytime

● **DBldisc** ON|OFF

<p style="text-align:right">v2.3</p>

default OFF   All Units   Packet

When OFF, only one disconnect command (D) need be given to terminate an unsuccessful connect attempt. If you are actually connected, the normal disconnect sequence will occur. When ON, a normal disconnect sequence will always occur (you will not be disconnected until you receive an acknowledge of your disconnect or until the retry count is exceeded). A second D is required to force a local disconnect independent of the retry counter.

See also: disconnect

● **DElete** n (n = $00 - $FF)

default $08   All Units   All Modes

This command sets the character to be used as the delete character. When this character is typed, the last input character is deleted. The most common settings are $08 (backspace) and $7F (delete).

See also: bkondel

● **DIDdle** ON | OFF
default ON   KAM   RTTY/ASCII

When ON, a diddle character is sent when no characters are available from the keyboard or buffer during transmission in RTTY or ASCII Mode. In RTTY the diddle character is the LTRS character; in ASCII the diddle character is a null.

● **DIGipeat** ON | OFF
default ON   KPC-1/KPC-2/KPC-2400   Packet
default ON/ON   KAM/KPC-4   Packet

When ON, any packet received that has MYCALL or MYNODE in the digipeat list of its address field will be retransmitted. Each station included in the digipeat list relays the packet in the order specified in the address field. Digipeating takes place concurrently with other TNC operations and does not interfere with normal connected operation of the station. To disable digipeat operations (via MYCALL or MYNODE) turn this command OFF.

See also: alias, gateway, hid, mycall, mynode

● **Disconnect**
immediate   All Units   Packet/PBBS/KA-NODE

This command will intitiate an immediate disconnect request on the current I/O stream. A successful disconnect results in the display of *** DISCONNECTED. If the RETRY count is exceeded while waiting for the connected station to acknowledge, the TNC moves to the disconnected state on that stream. Entering a second Disconnect command before RETRY has expired will result in an immediate disconnect on your end, but may leave the other station thinking it is still connected to you. Disconnect messages are not displayed when the TNC is in Transparent Mode. Other commands may be entered while the disconnect is in progress.

Disconnect MYPBBS

Issue this command if you want to cause the personal mailbox to issue a disconnect to the user of the mailbox. D MYPBBS is what you should type, do not type the call entered in the mypbbs command.

Disconnect MYNODE x (x = KA-NODE circuit)

x may be any of the KA-NODE circuits in use, designated by A, B, C, etc. This command will cause the node to disconnect the stations linked through the node on the circuit specified. MYNODE does not refer to the call entered in the mynode command, but is the actual characters to type.

See also: dbldisc, newmode, retry, status

● **DISPlay** [c]

immediate   All Units   Packet

This command causes the TNC to display a list of all the parameters in the TNC. You may also display only selected parameters by specifying the appropriate class identifier for that group. When using the DISPLAY command with a subclass be sure to use a space between the DISPLAY command and the subclass. Subclasses of related parameters are:

(A)sync   asynchronous port parameters (TNC to computer)
(C)haracter   special TNC characters
(I)d   ID parameters
(L)ink   parameters affecting packet link (TNC to TNC)
(M)onitor   monitor parameters
(T)iming   timing parameters
(X)t   parameters of non-packet modes only (KAM only)

Individual parameter values can be displayed by entering the command name followed by <CR>.

● **DWait** n   (n = 0 - 255)

default 0   KPC-1/KPC-2/KPC-2400   Packet
default 0/0   KAM/KPC-4   Packet

Each increment specifies 10ms intervals. This value is used to avoid collisions with digipeated packets. The TNC will wait n * 10ms after last hearing data on the channel before it begins its own keyup sequence. This value should be established and agreed on by all members of a local area network. The best value will be determined by experimentation but will be a function of the keyup time (TXDELAY). This feature is made available to help alleviate the drastic reduction of throughput which occurs on a channel when digipeated packets suffer collisions. Digipeated packets are not retried by the digipeater but must be restarted by the originating station. If all stations specify DWAIT, and the right value is chosen, the digipeater will capture the frequency every time it has data to send since digipeated packets are sent without this delay.

Recent observations have proven that a better algorithm for avoiding collisions between end-user stations, while still allowing digipeaters the high-priority access they require is achieved using persistence and slottime to determine proper transmit intervals, and setting DWAIT to 0.

See also: persist, slottime

● **Echo** ON|OFF

default ON   All Units   All Modes

When ON, characters received from the computer by the TNC are echoed back and displayed. If you are receiving double print of characters entered at the keyboard, turn this command OFF. This corresponds to the setting in your terminal program for duplex. If your program is set for full-duplex set ECHO ON. If your program is set for half-duplex (some call it echo) then set ECHO in the TNC to OFF. Regardless of the setting of this command, the TNC will not echo an X-OFF or X-ON character to the terminal when it receives a STOP or START character. Echo is disabled in Transparent Mode.

● EQualize   ON|OFF
default ON   KPC-1/KPC-2/KPC-2400   Packet

When ON, the Bell 202 tones received at the TNC input from the transceiver
audio output circuits are equalized for improved performance of the demodulator.
Transceiver audio circuits vary in the amount of "roll-off" of higher frequencies.
Test your station with the equalize ON and OFF to determine which setting is best.
Indication of the best setting is generally the one which results in fewer retries when
sending packets. This command has no effect on 2400 b/s operation.

● EScape   ON|OFF
default OFF   All Units   Packet

This command specifies the character which will be output to the terminal when an
escape character ($1B) is received in a packet. When OFF, $1B is sent, this is useful if
your terminal interprets ESC characters as screen positioning commands (ANSI).
When ON, the escape character is sent as a dollar sign ($).

● EXTmodem   ON|OFF
default OFF   KAM/KPC-4   Packet

When ON, the optional external modem (KM-2400 or MSK Modem) is used on the VHF
radio port (Port 2 for KPC-4).

● Fec   [xxxx[xxx]] characters (or 4, 5, or 9 digits)
immediate   KAM   AMTOR

This command sets the TNC in FEC mode. When a selcal is specified, xxxx[xxx], the
TNC will call the specified station using SELFEC (Selective FEC).

See also: amtor, autostrt, canline, lamtor, pmode, txdfec; Amtor section of Operations
Manual

● FIlter   ON|OFF
default OFF   All Units   Packet/RTTY/ASCII

When ON, this command will inhibit the printing of control characters (hex $00 - $19)
which may be present in monitored packets. This will be useful if you are monitoring
channel traffic which includes binary file transfers or higher level protocols (networks
talking to each other). Control characters which may be embedded in those packets can
have strange and unpredictable effects on the monitoring TNC. All control characters
except carriage return ($0D) and line feed ($0A) will be filtered. This command DOES
NOT affect receipt of control characters in packets received from a "connected" station
when MONITOR is OFF.

This command also inhibits the printing of control characters in the ASCII Mode
(KAM).

See also: monitor

● **FLow** ON|OFF

| default OFF | KAM/KPC-4 | All Modes Except Wefax |
| default ON | KPC-1/KPC-2/KPC-2400 | Packet |

When FLOW is ON, any character entered from the terminal will halt output to the terminal until the current packet is completed (by SENDPAC, PACLEN, or PACTIME). Cancelling the current input to the TNC or typing the REDISPLAY-line character will also cause output to resume. FLOW will keep received data from interfering with data entry. When FLOW is OFF, received data will be "inter-leaved" with keyboard entry. If using a split screen terminal program, you should have FLOW OFF and ECHO OFF to allow received data to be displayed while you type into the TNC's type-ahead buffer.

In non-packet modes, you will probably want to run a split screen terminal program so that your keyboard input will not be intermingled with received data. In this case, you should turn FLOW OFF and ECHO OFF. You may also want to turn XMITECHO ON to have the TNC display the characters to your terminal as they are actually being transmitted.

See also: canline, canpac, cpactime, echo, paclen, redisplay, sendpac, xmitecho

● **FRack** n (n = 1 - 15)

| default 4 | KPC-1/KPC-2/KPC-2400 | Packet |
| default 4/4 | KAM/KPC-4 | Packet |

Each increment specifyies 1 second intervals. After transmitting a packet requiring acknowledgment, the TNC waits FRACK seconds before incrementing the retry counter and sending the packet again. If the retry count (specified by the RETRY command) is exceeded, the current operation is aborted. If the packet address includes relay requests, the time between retries is adjusted to FRACK * ((2 * m) + 1) where m is the number of intermediate relay stations specified. When the retried packet is sent, a random wait time is also added to avoid lockups where two units repeatedly collide with each other.

See also: connect, resptime, retry

● **FSkinv**

| default OFF | KAM | RTTY/ASCII/AMTOR |

This command controls the polarity of the FSK output of the HF radio connector. When OFF, MARK is open-collector and SPACE is grounded. When ON the polarity of MARK and SPACE are reversed.

● **FUlldup** ON|OFF

| default OFF | All Except KPC-1 | Packet |

When OFF, the data carrier detect signal is used as a packet collision avoidance signal. When ON, the VHF modem is run full duplex, and carrier detect does not inhibit transmission. The full duplex mode may be useful especially for satellite operations using duplex radio setups. Full duplex should not be used unless both you and the station you are communicating with have full duplex capability.

KAM / KPC-4

The FULLDUP command is valid only if one radio port is disabled by setting MAXUSERS to 0/n or n/0.

● **Gateway** ON | OFF

default OFF   KAM/KPC-4   Packet

When OFF cross-connecting through the TNC's KA-NODE and digipeating through the callsign specified in MYGATE are not allowed. When ON, Xconnects through the KA-NODE and digipeating from one radio port to the other are allowed.

See also: hid, mygate, mynode

● **Hbaud** n   (n = 300, 400, 600, or 1200)

                                   All Units   Packet

This baud rate specifies the rate of data exchange between the radio stations. The value of HBAUD has NO relationship to the terminal baud rate specified with ABAUD. In order to communicate with other packet stations, the baud rate must be the same at each end of the link. As a general rule, 300 baud is used on frequencies below 28MHz, 1200 baud is used on frequencies above 28Mhz. FCC rules currently limit the maximum baud rate to 300 when operating below 28 MHz.

default 1200   *KPC-1/KPC-2*

It is generally not necessary to change the HBAUD setting when operating HF, since HF ON automatically adjusts the HBAUD rate.

See also: hf, hftones, ccitt

default 1200   *KPC-2400*

It is generally not necessary to change the HBAUD setting when operating HF, since HF ON automatically adjusts the HBAUD rate. An additional HBAUD rate of 2400 is allowed for this TNC. The 2400 rate modem in the KPC-2400 has a bit rate of 2400 but a baud rate of 1200; therefore a setting of Hbaud 2400 may be used at frequencies above 28Mhz.

default 1200/1200   *KPC-4*

default 300/1200   *KAM*
(n = HF 50 - 300/VHF 300, 400, 600, 1200)

This command works slightly differently in the KAM than the other dual-port type commands. The HBAUD values allowed on the HF port are 50 to 300 inclusive, and the VHF port will allow 300, 400, 600, and 1200. Entering the command HBAUD with a single parameter (HBAUD 300 for instance) will only set the HF port speed. To set both ports, you must use the form HBAUD speedHF/speedVHF. To set only the VHF port, use the form HBAUD /speedVHF. 1200 baud HF can be accomplished by connecting the HF radio to the VHF port. FCC rules currently limit the baud rate at 300 when operating below 28 MHz.

● **HEaderln** ON | OFF

default OFF   All Units   Packet

When ON a carriage return is outputto the terminal between the header and text of monitored packets. This causes the packet header and time stamp (if on) to be displayed on one line, with the packet text displayed below it on the next line. When monitoring only packets addressed to you (MONITOR and/or MCON OFF) this parameter does not apply.

See also: cstamp, mcon, monitor, mstamp

● HELp
immediate   All Units   All Modes

Causes a display of all possible commands.

● HF   ON|OFF
default OFF   *KPC-2/KPC-2400*   Packet

This command sets the TNC for operation on the High Frequency bands. With this command ON the modem output baud rate (HBAUD) is set to 300. The specific tones used are dependent on the current setting of the CCITT and HFTONES commands. Analysis of the tone chart in the CCITT command shows that with HF ON a selection of four different tone pairs are available based on the CCITT and HFTONES command settings. Selection of any particular pair is not critical, though you may find that one will perform better than another under some band conditions.

See also: ccitt, hbaud, hftones

default OFF   *KPC-1*

This command sets the TNC for operation on the High Frequency bands. With this command ON the modem output baud rate (HBAUD) is set to 300. The specific tones used are dependent on the current setting of the HFTONES command.

See also: hbaud, hftones

● HFTones   ON|OFF
default OFF   *KPC-2/KPC-2400*   Packet

This command, when used in conjunction with the CCITT and HF commands, selects the particular tone pair to be used. Analysis of the tone chart in the CCITT command will give the combinations possible.

See also: ccitt, hf

default OFF   *KPC-1*   Packet

This command, when used in conjunction with the HF command selects the particular tone pair to be used.

HF	HFTONE	TONE PAIR
off	off	1200/2200 (Bell 202)
off	on	1200/2200 (Bell 202)
on	off	1070/1270 (Bell 103)
on	on	2025/2225 (Bell 103)

See also: hf

● HId   ON/OFF
default ON   KPC-1/KPC-2/KPC-2400   Packet
default ON/ON   KAM/KPC-4   Packet

When ON, an ID packet will be sent every 9.5 minutes, provided that packets are being digipeated through your station, or routed through your KA-NODE, or into your PBBS. This command should be ON if digipeating, gateway, node or pbbs is enabled. If OFF, periodic identification packets will not be sent.

See also: alias, digipeat, gateway, id, numnodes, pbbs

● Id

immediate   All Units   Packet

When this command is entered an identification packet will be forced. This command can be used to insure that your station identification is the last transmission before taking the station off the air. The ID packet is an unnumbered information <UI> packet whose data consists of your station identification as set in MYCALL. The MYCALL will be appended with "/R", MYALIAS callsign appended with "/D", MYGATE callsign appended with "/G", MYNODE callsign appended with "/N", and MYPBBS callsign appended with "/B", if these functions are enabled. This packet will be addressed to "ID" and digipeated via any addresses specified in the UNPROTO command.

See also: hid, unproto

● INtface   TERMINAL | BBS | HOST | KISS   v3.0

default TERMINAL   All Units

When set to TERMINAL, the TNC will operate with a standard terminal or computer running a terminal emulation program. When set to BBS, the TNC deletes certain messages (i.e. *** connect request, *** FRMR, etc) for greater compatibility with full-service BBS programs such as WØRLI, WA7MBL, CBBS, etc. When set to HOST, the TNC will talk to the attached computer using the Kantronics HOST mode (Packet ONLY). (See the Host Mode Section in the Operations Manual for details.) When set to KISS, the KISS code as specified by Phil Karn is implemented for communication to the attached computer. (See KISS Mode section in the Operations Manual.)

After changing the setting of this command, a soft reset must be performed for the new mode to take effect (see RESET).

See also: pmode

● INvert   ON | OFF

default OFF   KAM   RTTY/ASCII/AMTOR

When ON, signals received in RTTY, AMTOR or ASCII are inverted. While in RTTY, ASCII, or AMTOR Modes, entering a Ctrl-C I command will toggle the inversion ON and OFF.

See also: Ctrl-C directives in the Directives section

● K   v2.84

immediate   All Units   Packet

This single letter command is synonymous with CONVERS. It is included as a single-keystroke convenience for entering Convers Mode.

See also: convers

● **KNtimer** n (n = 0 - 255)   v2.85
default 15   All Units   KA-NODE

If there is no activity (data) on a KA-NODE circuit for n minutes, the KA-NODE will disconnect both the input and output sides of the KA-NODE circuit. Setting KNTIMER to 0 disables this feature.

See also: rnrtime

● **Lamtor**
immediate   KAM   AMTOR

This command sets the TNC in Listen AMTOR Mode. The TNC will receive either FEC or ARQ signals. The selcal being used by a station sending ARQ phasing signals may also be decoded when in this mode. Such calls will appear on the display as the same four letter group appearing repetitively on the display.

See also: amtor, fec, misschar

● **LCok** ON|OFF
default ON   All Units   All Modes

When ON, no character translation occurs in the TNC. If OFF, lower case characters will be translated to upper case before being output to the terminal from the TNC. This case translation is disabled in Packet Transparent Mode.

● **LCRtty** ON|OFF
default OFF   KAM   RTTY/ASCII/AMTOR

When ON, lower case characters can be sent and received in RTTY, ASCII and AMTOR Modes. If you are sending lower case RTTY, the other station will print lower case RTTY only if its LCRTTY parameter is also ON. This is accomplished by using the RTTY null character as a special shift character; this is the same method used in RTTY to send the Russian Cyrillic alphabet. If USOS is ON, a received space will cause a shift to the lower case.

See also: usos

● **LCStream** ON|OFF   v2.3
default ON   All Units   Packet
When ON, the TNC allows for lower-case characters to be used in stream switching.

See also: status, streamsw

● **LFadd** ON|OFF

default OFF   All Units   Packet/RTTY/ASCII/AMTOR

When ON, a linefeed character <LF> is added to outgoing packets following each return <CR> transmitted in the packet. This function is similar to AUTOLF, except that the linefeed characters are added to outgoing packets rather than to text displayed locally. This feature will permit you to add linefeeds to outgoing packets if the station you are linked to is receiving overprinted packets on his display and has no local means to correct it. This character insertion is disabled in the Transparent Mode.

See also: autolf

● **LList** ON|OFF

v2.3

default OFF   All Units   Packet

When ON, stations in the SUPCALLS list attempting to connect to or digipeat through your station will be ignored.

See also: supcalls

● **LOwtones** ON|OFF

default OFF   KAM   RTTY

When ON, the European low-tones are used with 170, 425, or 850 shift RTTY. These are: Space = 1275Hz, Mark = 1445Hz, 1700Hz, or 2125Hz.

● **MAll** ON|OFF

default ON   KPC-1/KPC-2/KPC-2400   Packet
default ON/ON   KAM/KPC-4   Packet

When ON, monitored packets include "connected" packets between other stations. If OFF, other stations connected packets will not be monitored. This is a useful arrangement when stations are talking as a group in an unconnected configuration.

See also: monitor

● **MARk** n (n = 50 - 4000)

default 1600   KAM   All Modes Except CW

This command sets the mark frequency when the SHIFT command is set to modem, or in the packet mode. It also controls the bargraph mark frequency indication.

See also: shift

● **MAXframe** n (n = 1 - 7)

default 4	KPC-1/KPC-2/KPC-2400	Packet
default 1/4	KAM	Packet
default 4/4	KPC-4	Packet

MAXFRAME sets an upper limit on the number of unacknowledged packets which can be outstanding at any one time. The TNC will send MAXFRAME number of packets in a single transmission, if they are available.

See also: paclen

● **MAXUSERS** n (n = 1 - 26)

default 10	*KPC-1 / KPC-2 / KPC-2400*	Packet
default 10/10	*KAM / KPC-4*	Packet

This command causes the TNC to allocate the memory required for the maximum number of simultaneous connections you wish to allow. Each connection uses a different stream. In order to direct what you want to say to a different stream you use the STREAMSW character. All streams may be used for outgoing packets, but USERS sets the number that may be used for incoming connections. Changing the value of MAXUSERS will cause the TNC to perform a "soft reset". In order to change the current value of MAXUSERS, you must spell out the entire command word. Note that you may not change the value of MAXUSERS while you are connected, since this would reset the TNC and cause all existing connections to be lost.

KAM / KPC-4

The KAM and KPC-4 will allow a setting of 0. If MAXUSERS is set to 0/0, these TNCs will accept only one connect at a time from either port of the TNC. This special condition will be highlighted by being displayed simply as MAXUSERS 0. This makes it feasible to use the KAM/KPC-4 with MBL or RLI BBS programs on two frequencies. Setting MAXUSERS to 0/n or n/0 will disable the port designated for 0 and also will permit the TNC to enter the KISS mode on the non-zero port.

See also: status, streamsw, users

● **MBeacon** ON | OFF

		v2.70
default ON	KPC-1/KPC-2/KPC-2400	Packet
default ON/ON	KAM/KPC-4	Packet

This command determines whether packets addressed to Beacon or ID will be monitored and displayed on the screen. If you do not wish to monitor Beacon or ID packets, turn this command OFF.

See also: beacon, id, monitor

● **MCOM** ON | OFF
default OFF   KPC-1/KPC-2/KPC-2400   Packet
default OFF/OFF   KAM/KPC-4   Packet

When ON, monitored packets include the following AX.25 control packets, if MONITOR is ON. If connected, MCON must also be ON. The "<" and "<<" characters are used to bracket and denote packets received as version 1 or version 2, respectively. The bracketed information will appear at the end of the header information.

<C>	Connect request
<D>	Disconnect request
<DM>	Disconnected Mode
<UA>	Unnumbered Acknowledge

In addition, the following bracketed information will be added to the Information packets as appropriate:

<UI>	Unconnected Information frame
<Is>	Information frame (connected); s = send sequence number

See also: ax25l2v2, monitor, mresp

For more information, the book *AX.25 Amateur Packet-Radio Link-Layer Protocol Version 2.0 October 1984*, can be obtained from the ARRL.

● **MCon** ON | OFF
default OFF   KPC-1/KPC-2/KPC-2400   Packet
default OFF/OFF   KAM/KPC-4   Packet

When OFF, and connected, you will monitor only those packets addressed to you. Any header information displayed will be determined by the settings of STREAMEV and STREAMCA. When OFF, and not connected, all eligible packets (as determined by other monitor commands) will be monitored. When ON, all eligible packets will be monitored whether connected or unconnected.

See also: monitor, streamca, streamev

● **MHClear**
immediate   All Units   Packet

This command erases the stations heard log.

See also: mheard

● **MHeard** [S | L]

immediate   All Units   Packet

This command causes display of a list of stations heard. An asterisk, *, indicates that the station was heard through a digipeater. The date/time the station was last heard is also displayed. If the S option is used, i.e. MHEARD S, then only the callsigns of the stations heard will be displayed. If the L option is selected, all callsigns contained in the received packet as well as the digipeater paths, are displayed. For example:

WDØEMR > ID   10/16/88 14:31:30
    VIA TOP, KSBRE, WØXI, SUTNE

Here, your station heard WDØEMR transmitting an ID packet. WDØEMR was also using the digipeating path TOP, KSBRE, WØXI, SUTNE. If your station heard WDØEMR via one of these other stations, an asterisk would show by the call or alias of the last digipeater heard and an asterisk would show beside WDØEMR.

See also: daytime, mhclear

● **MIsschar** n (n = $00 - $FF)   v2.85

default $20   KAM   AMTOR

This defines the character to be printed on the terminal when operating in the AMTOR Mode B and the received character is invalid or unrecognized.

See also: amtor, lamtor

● **MODemena** ON | OFF

default OFF   KCP-1/KPC-2/KPC-2400

This command places the TNC in the Dumb Modem Mode. See the Dumb Modem Mode section of the Installation Manual for details.

● **Monitor** ON | OFF

default ON   KPC-1/KPC-2/KPC-2400   Packet
default ON/ON   KAM/KPC-4   Packet

When ON, unconnected packets will be monitored unless prohibited by SUPLIST, BUDLIST, CONLIST, or LLIST. This will also allow monitoring of other packets if permitted by the other monitor commands. The MONITOR command acts as a master switch for the MALL, MCOM, MCON, MRESP, and MRPT commands. The addresses in the packet are displayed along with the data portion of the packet. Callsigns (to and from fields) are separated by a ">" and the callsign extension field (SSID) is displayed if it is other than 0. All monitor functions are disabled in the Transparent Mode.

When OFF, you will monitor only those stations connected to you, no matter how other monitor commands are set. Any header information displayed will be determined by the settings of STREAMCA and STREAMEV.

See also: budlist, conlist, headerln, mall, mbeacon, mcom, mcon, mresp, mrpt, mstamp, streamca, streamev, suplist

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Where: code is entered as a combination of * and - characters; TX represents a keyboard character entered in hex or decimal; and RX denotes the character(s) displayed upon reception, entered in hex, decimal, or two alpha characters.

This command is used to define the desired keyboard character, and display character(s) for each code listed in the table below. Only those codes listed may be defined using the MORSE command; standard Morse codes may not be redefined.

For example, suppose you wish to define the "wait" code *-*** by the keystroke "^" and have it displayed as "BB". You would enter:

cmd: MORSE *-*** $5E $4242 <CR> ($ precedes hex codes)

If you try to define a previously defined code, you will get the message "TX CHARACTER ALREADY DEFINED". In order to delete an entry use the command MORSE code 00 0000 to clear the code and then redefine it. Standard codes may not be redefined. Refer to the ASCII Chart at the end of this book for a listing of hex codes. Codes available for definition by MORSE are:

MORSE

CODE	TX	RX	CODE	TX	RX
**--	$00	$00	*-*-	$2A(*)	$4141(AA)
---*	$00	$00	----	$00	$00
***-*	$21(!)	$534E(SN)	**-**	$00	$00
**-*-	$00	$00	**--*	$00	$00
*-***	$25(%)	$4153(AS)	*-**-	$00	$00
--*	$2B(+)	$4152(AR)	*-*--	$00	$00
*--**	$00	$00	*---*	$00	$00
---	$00	$00	-**-*	$2F(/)	$2F(/)
-**--	$00	$00	-**-**	$00	$00
-*-*-	$26(&)	$4B41(KA)	-*--*	$28(()	$28(()
-*---	$00	$00	--**-	$00	$00
--*-*	$00	$00	--*--	$00	$00
---*-	$00	$00	***-*-	$23(#)	$534B(SK)
*-***-	$00	$00			

If SCREENL is set to a value from 1 to 60, the above table will be displayed in one column instead of two columns.

See also: cw, prosign

● MResp ON|OFF

default OFF   KPC-1/KPC-2/KPC-2400

default OFF/OFF   KAM/KPC-4

When ON, monitored packets include the following AX.25 response packets, if MONITOR and MCOM are ON. If connected, MCON must also be on. The bracketed information will appear at the end of the header information. The "<" and "<<" characters are used to bracket and denote packets received as version 1 or version 2, respectively. For example, "<<RR1>>" denotes a version 2 packet. In addition upper case characters are used to designate commands (polls) and lower case characters are used to denote responses for RR, REJ, and RNR. For example, <<rr1>> is a response in version 2.

<FRMR>   Frame Reject
<REJr>   Reject, r = received sequence number
<RNRr>   Device busy, r = received sequence number
<RRr>   Receive Ready, r = received sequence number

In addition, the following bracketed information will be added to the Information packets as appropriate:

<Isr>   Information frame (connected);
              s = send sequence number, r = received sequence number

See also: ax25l2v2, mcom, monitor

For more information the book *AX.25 Amateur Packet-Radio Link-Layer Protocol Version 2.0 October 1984,* can be obtained from the ARRL.

● MRPt ON|OFF

default ON   KPC-1/KPC-2/KPC-2400   Packet

default ON/ON   KAM/KPC-4   Packet

This command affects the way monitored packets are displayed. If ON, the entire digipeat list is displayed for monitored packets, and the station that relayed the packet is indicated with an asterisk. The MONITOR command must be ON for this command to work, and if connected MCON must also be ON. If OFF, only the originating station and the destination station callsigns are displayed for monitored packets.

See also: monitor

● MStamp ON|OFF

default OFF   All Units   Packet

This command enables time stamping of monitored packets. The date and time information is then available for use for automatic logging of packet activity or other computer applications. The date and time are set initially by the DAYTIME command, and the date format is determined by the DAYUSA command. The MONITOR command must be ON for this command to work, and if connected MCON must also be ON.

See also: cstamp, daytime, monitor

● **MYAlias** xxxxx-n

default MYCALL KPC-1/KPC-2/KPC-2400 Packet

default MYCALL/MYCALL KAM/KPC-4 Packet

This command allows the entry of an alternate identifier to be used for packet digipeat operations. For example: you may enter LAW-3 as the MYALIAS, which would be easier to remember for stations wishing to digipeat through a station in Lawrence, enroute to a station more distant. Enter up to six characters, using a callsign (plus an SSID) which is different than that used for MYCALL, MYNODE, MYPBBS, or MYGATE.

See also: alias, hid

● **MYAUtost** xxxxxx

v3.0

default MYCALL KAM RTTY/ASCII

This command specifies the callsign used for automatically starting receive operation in RTTY and ASCII when the AUTOSTRT command is ON. The callsign may be up to seven (7) characters long, allowing for MARS callsigns.

See also: autostrt

● **MYcall** xxxxx-n

All Units Packet

This command tells the TNC what its callsign is. When the TNC is first turned on out of the box, or after a hard reset, it asks you for your callsign – there is NO DEFAULT. The callsign you enter is placed in this parameter. The extension n is called a Substation ID (SSID) and is defaulted as 0, but may be any number from 0 to 15. All packets originated by the TNC will contain this callsign in the FROM address field. Any packets received by the TNC with this callsign in the TO address field or digipeat fields will be responded to appropriately (connect, disconnect, ack, digipeat, etc.).

See also: digipeat, id, myalias, mygate, mynode, mypbbs

● **MYGate** xxxxx-n

default MYCALL KAM/KPC-4 Packet

This command tells the TNC what its gateway callsign is. Another user may digipeat from one radio port to the other if MYGATE is specified in the packet digipeat field and GATEWAY is ON. Enter up to six characters, using a callsign (plus an SSID) which is different than that used for MYCALL, MYALIAS, MYPBBS, or MYNODE.

See also: gateway, hid

● **MYNode** xxxxx-n

v2.8

default MYCALL All Units KA-NODE

This command tells the TNC what callsign is to be used when a remote station is connecting to the KA-NODE. Enter up to six characters, using a callsign (plus an SSID) which is different than that used for MYCALL, MYALIAS, MYPBBS, or MYGATE.

See also: digipeat, ndwild, numnodes

● **MYPbbs** xxxxxx-n   v2.70
default MYCALL   All Units   PBBS

Enter up to six characters which will be used as the operating address for your
Personal Packet Mailbox. Enter up to six characters, using a callsign (plus an SSID)
which is different than that used for MYCALL, MYALIAS, MYNODE, or MYGATE.

See also: pbbs

● **MYSel4** xxxx   v3.0
                                        KAM   AMTOR

The 4 character selcal specified by xxxx will be recognized, when operating in AMTOR
mode A, as your station identification. The convention used for AMTOR selcals is to
use the first letter and the last three letters of your callsign as your selcal. If your
callsign has only three letters, use the first letter twice. For example, use WWXI for
WØXI or use KZTX for KA5ZTX. The MYSEL4 will also accept 4 or 5 digit numbers,
and generate the corresponding 4 character selcal automatically from these numbers.
(See the AMTOR section in the Operations Manual.)

See also: amtor, fec, mysel7

● **MYSEL7** xxxxxx   v3.0
                                        KAM   AMTOR

The 7 character selcal specified by xxxxxxx will be recognized when operating in the
AMTOR mode A resulting in a link using the AMTOR 625 specification. There is no
standard convention at this time for selecting a 7 character selcal, so you may choose
any valid AMTOR selcal characters as your selcal. The valid characters that may be
used for a seven character selcal are A, B, C, D, E, F, I, K, M, O, P, Q, R, S, T, U, V, X, Y,
and Z. This limitation is due to the checksum calculations used in a CCIR 625 selcal,
and means you cannot use the letters G, H, J, L, N, or W as part of your 7 character
selcal. The MYSEL7 will also accept a 9 digit number, and generate the corresponding
7 character selcal automatically from these numbers. (See the AMTOR section in the
Operations Manual.)

See also: amtor, fec, mysel4

● **NAVClr**   v3.0
immediate   KAM   NAVTEX/AMTEX

This command will clear the list of messages which have been received in the
NAVTEX/AMTEX mode. Any message which has previously been received will be
eligible to be received again.

See also: navtex

● **NAVErr** n (n = 0 - 10)

The NAVERR command specifies the maximum percent of errors allowed in a NAVTEX/AMTEX message before the message is considered to be invalid. If the message is received with less than n% errors, that same message number will not be sent to the terminal if received a second time. If the received message contains excessive errors, the error message "***TOO MANY ERRORS XXXX" will be sent to the terminal (XXXX represents the NAVTEX/AMTEX message identification). This error message indicates that the NAVTEX/AMTEX message will be printed again when received.

See also: navtex

● **NAVMsg** c[ccccc...]|ALL|NONE (c = A - Z)

The NAVMSG command specifies which classes of NAVTEX messages will be sent to the attached terminal. Three classes (A, B, and D) must always be sent according to the specification, but may be elimated by the user. If any of these required message classes are not selected, the KAM will issue a warning message. Specifying ALL will set the NAVMSG to copy all classes of messages, and setting NAVMSG NONE will exclude all classes. See the NAVTEX section of the Operations Manual for more details.

See also: navsta, navtex

● **NAVSta** c[ccccc...]|ALL|NONE (c = A - Z)

The NAVSTA command specifies which originating stations will be copied in the NAVTEX mode. Each transmitting station uses a unique identifier, allowing you to select only those stations of interest in your area. If you specify ALL, the KAM will copy all NAVTEX stations. Specifying NONE will disable copying of any NAVTEX station, thus effectively disabling the NAVTEX mode, and will also cause a soft reset. This will free up about 725 bytes of memory normally required for NAVTEX operation. See the NAVTEX section of the Operations Manual for more details.

See also: navmsg, navtex

● **Navtex**

This is an immediate command that will place your KAM into the NAVTEX mode of operation. This will also allow you to copy AMTEX messages (refer to the 8th Computer Networking Conference papers for details). See the NAVTEX section of the Operations Manual for more information.

See also: navclr, naverr, navmsg, navsta, pmode

● **NDHClear**

This command will clear the list of nodes heard by the TNC.

See also: ndheard

● **NDHeard** [S | L]
immediate   All Units   Packet

This command allows the operator to display a list of nodes whose ID packet has been heard by the TNC. The lists includes KA-NODEs as well as TheNet and NET/ROM nodes. TheNet and NET/ROM nodes are identified as:

ALIAS (CALLSIGN)

and Kantronics KA-NODES will be identified as:

MYNODE (MYCALL)

An asterisk, *, indicates that the station was heard through a digipeater. The date/time the station was last heard is also displayed. If the S option is used, i.e. NDHEARD S, then only the callsigns of the stations heard will be displayed. If the L option is selected, all callsigns contained in the received packet are displayed. (See MHEARD for display.)

See also: mynode, ndhclear

● **NDWild** ON | OFF
v2.85
default OFF   All Units   KA-NODE

When OFF, the KA-NODE will only recognize connect requests directed to the MYNODE call. When ON, connect requests to any SSID of the MYNODE call will be recognized as connects to the KA-NODE, if that SSID is not being used for any other ID in the TNC.

See also: myalias, mycall, mygate, mynode, mypbbs

● **Newmode** ON | OFF
default ON   All Units   Packet

When ON, the TNC will return to Command Mode if the station on the current I/O stream disconnects. The TNC will not return to Command Mode if the station disconnecting is on a different stream. When OFF, a disconnect will not cause the TNC to change modes.

See also: connect, disconnect, status

● **NOmode** ON | OFF
v2.3
default OFF   All Units   Packet

When OFF and a connection takes place, the TNC will change to whatever mode is specified in CONMODE. When ON, the TNC stays in Command Mode after connecting to another station; that is, it does not immediately change to Convers or Transparent Mode.

See also: conmode, connect

● **NText** message (up to 128 characters)   v2.84
default (blank)   All Units   KA-NODE

This entry specifies customized text to be sent with the initial KA-NODE sign-on
message (when the KA-NODE is connected to by a remote station). Enter any
combination of characters and spaces up to a maximum length of 128. Entering a
single "%" will clear NTEXT.

See also: mynode, numnodes

● **NUcr** n (n = 0 - 31)
default 0   All Units   All Modes

This command determines the number of nulls sent to the terminal after a <CR>, in
order to enable a transmission delay following any <CR> sent to the terminal. This is
useful for some hardcopy terminals.

● **NULf** n (n = 0 - 31)
default 0   All Units   All Modes

This command determines the number of nulls sent to the terminal after a <LF>, in
order to enable a transmission delay following any <LF> sent to the terminal. This is
useful for some hardcopy terminals.

● **NUMNODES** n (maximum depends on RAM)   v2.8
default 0   All Units   KA-NODE

This command is used to set the number of allowable circuits through the KA-NODE.
For example, if you wish to allow up to 6 simultaneous circuits through the node, set
NUMNODES 6. The number allowed will depend upon the amount of RAM available
in your TNC. If you select n larger than the available RAM will allow, an "out of range"
message will be returned to you. Generally, set the amount of RAM required first for
your PBBS (personal bulletin board) and then set the desired number of circuits.
Approximately 4K of RAM is used for each circuit. This command will cause a soft
reset.

See also: mynode

● **Oneradio** ON I OFF
default OFF   KPC-4   Packet

This command can be used only with certain Kantronics' external modems installed in
radio Port 2. Depending upon the modem, it may be possible to connect both radio
ports in parallel to one radio. The KPC-4 then could determine whether an incoming
packet was normal (1200 baud FSK) or special (such as 2400 baud QPSK) and react
accordingly. See the documentation that comes with the external modem for more
details. If the external modem cannot support the ONERADIO command, it is ignored.

● **Paclen** n (n = 0 - 255)

default 128   KPC-1/KPC-2/KPC-2400   Packet
default 128/128   KAM/KPC-4   Packet

This command specifies the maximum length of the data portion of a packet. The TNC will automatically send a packet when the number of input bytes reaches n. This value is used in both Convers and Transparent Modes. A value of 0 means 256 bytes.

See also: maxframe

● **PACTime** (Every/After)n (n = 0 - 255)

default After 10   All Units   Packet

This parameter is always used in Transparent Mode, and will also be used in Convers Mode if CPACTIME is ON. When After is specified, bytes are packaged when input from the terminal stops for n*100 ms. When Every is specified, input bytes are packaged and queued for transmission every n * 100 ms. A zero length packet is never produced, and the timer is not started until a new byte is entered. If Every or After is not given, the current state is retained.

See also: cpactime, trans

● **PARity** n (n = 0 - 4)

default 4   All Units   All Modes

This command sets the Parity mode for output to the terminal according to the following table:

n Parity

0 odd
1 even
2 mark
3 space
4 none (no modification)

The TNC can only send serial output with 8 data bits and one stop bit. Setting the PARITY parameter defines the eighth bit. In Command Mode the eighth bit is automatically stripped; in Convers Mode and ASCII Mode stripping of the eighth bit is determined by 8BITCONV; in Transparent Mode the eighth bit is sent out as received. This command corresponds to the setting of parity in your communications program.

See also: 8bitconv

● **PASs** n (n = $00 - $FF)

default $16 (Ctrl-V)   All Units   Packet

This command selects the ASCII character used for the pass input editing command. You may use this character to send any character in a packet in Convers Mode, even though that character may have a special function. For example, if you wish to send a COMMAND character (Ctrl-C) as part of the packet, you can do so by preceding it with the PASS character. The character will be sent rather than returning the TNC to Command Mode. In Transparent Mode all characters are passed, there are no special functions except the one combination to get out of transparent.

● **PASSAll** ON|OFF

default OFF KPC-1/KPC-2/KPC-2400

default OFF/OFF KAM/KPC-4

When OFF, packets will only by displayed if the CRC (error checking) is correct, and according to monitor commands. When this command is ON, the TNC will accept packets, regardless of whether or not the CRC is correct. The TNC will attempt to decode the address field as well as the data field and display the packets as specified by other commands such as MONITOR. The entire packet, determined by the beginning and ending flags, must be received before an attempt is made to decode. If both flags are not received the data will not be decoded. MHEARD and NDHEARD logging are disabled when PASSALL is ON.

● **PBBS** n (maximum depends on RAM)

v2.70

default 0 All Units PBBS

Setting n greater than 0 allocates memory and activates the Personal Mailbox in the TNC. The amount of memory allocated will be n kilobytes, and may be limited by other functions requiring dynamic memory (i.e. NUMNODES, MAXUSERS, and also in the KAM NAVSTA). Changing the size of the PBBS memory allocation will not affect the contents of the mailbox (messages will be preserved) so long as sufficient memory remains allocated to store the existing messages. Using the PBBS n command with n equal to the current size will renumber the messages in the mailbox beginning with message number 1. If n is a different size, the messages will not be renumbered. This command causes a soft reset if n is different from its previous value. Turning off the TNC will destroy all messages in the mailbox, unless you are using the optional Battery Backup or SmartWatch.

See also: cmsg, mypbbs

● **PBPerson** ON|OFF

v2.85

default OFF All Units PBBS

When OFF the personal mailbox will allow messages to be sent to any callsign. When ON only messages addressed to the MYCALL or MYPBBS callsigns will be accepted.

See also: mycall, mypbbs, pbbs

● **PErm**

immediate All Units

This command causes any parameters changed since the last PERM command to be made "permanent"; all values are written into the EEPROM. As this process can not be undone by turning the TNC off, care should be taken to see that the correct values have been selected. The EEPROM chip can be PERMed a minimum of 1,000 times, typically over 10,000 times. The RESTORE D command or a Hard Reset (as described in the Installation Manual) will reinstate the factory default parameters. If using the optional Battery Backup or SmartWatch all changed parameters are backed up immediately and PERM is not necessary.

See also: restore

● **PERSist** n   (n = 0 - 255)   v2.70

default 63	KPC-1/KPC-2/KPC-2400	Packet/TCP-IP
default 192/63	KAM	Packet/TCP-IP
default 63/63	KPC-4	Packet/TCP-IP

n is used to determine if a packet will be sent after SLOTTIME expires. For example, let's assume a PERSIST setting of 63 and a SLOTTIME setting of 10. This slottime setting corresponds to 100 milliseconds. When the TNC detects that the channel is clear and available (no carrier is detected), it starts a timer (SLOTTIME). When the timer expires (100 ms in our case) the TNC generates a random number between 0 and 255. If the generated number is equal to or less than the PERSIST value, the TNC keys up the transmitter and sends the data packet. With our setting of 63 the odds of this occurring after the first slottime are 1 in 4. (Actually the probability is PERSIST plus 1 divided by 256.) If the TNC generated random number is greater than PERSIST, the TNC restarts the timer and waits for the timer to expire again before generating a new random number. This is repeated until the TNC gains channel access and sends its packet of information.

The algorithm used to determine whether or not to transmit using the PERSIST/SLOTTIME method has been shown to be considerably more sophisticated than the DWAIT method used by most standard AX.25 packet stations. The result of using the persistence algorithm is increased thruput under most channel conditions. Making SLOTTIME smaller will cause the TNC to generate the random number more frequently, whereas raising the PERSIST value will give a better chance (improve the odds) of transmitting the data. Through careful choice of these values, it is possible to improve data thruput while at the same time permitting shared channel usage by other packet stations. The persistence algorithm has been added on top of the DWAIT algorithm.

See also: slottime

● **PId**   ON|OFF   v2.3

| default OFF | KPC-1/KPC-2/KPC-2400 | Packet |
| default OFF/OFF | KAM/KPC-4 | Packet |

When OFF only those packets with a protocol ID of $F0 (pure AX.25) are displayed. When ON all packets are displayed. Some of the information in non-AX.25 (for example: TCP/IP, NET/ROM or TheNet) packets can cause some computers to lock up.

● **PMode**   x   (x = None, Ascii, AMtor, CW, Fec, Rtty, NAvtex)

| default NONE | KAM |

This command is used to determine the mode the TNC will be in at power-on, if INTFACE is not set to KISS or HOST. For example, if PMODE RTTY is used, the TNC will power-on in RTTY ready to operate at the baud rate specified in RBAUD, and no command prompt, cmd:, will appear. If not using the Battery Backup or SmartWatch option this must be PERMed to be in affect after the power is turned off.

See also: intface

● **POrt** HF | VHF (KAM)   1 | 2 (KPC-4)

default VHF   KAM

default 1   KPC-4

This command determines the radio port to which the I/O will be addressed at power-on. The streamswitch characters can then be used to switch between radio ports. If not using the Battery Backup or SmartWatch option this must be PERMed to be in affect after the power is turned off.

See also: streamsw

● **POStkey** n (n = 0 - 15)

v3.0

default 12   KAM   All Modes

This command sets the time delay after the last data has been sent to the radio before the PTT line is released on the HF port of the KAM. The audio will be turned off n * .83 milliseconds before releasing the PTT line.

See also: prekey

● **PRekey** n (n = 0 - 15)

v3.0

default 12   KAM   All Modes

This command sets the time delay between the assertion of PTT and the beginning of any audio from the KAM HF port to the radio. The audio will begin n * .83 milliseconds after the PTT line is activated.

See also: postkey

● **PRosign**

v2.84

CW

default $5C (\)   KAM

The PROSIGN command is used to select the character to be used as the lead-in character for forming a CW prosign. When the selected character is entered during CW transmission or within text to be used for CW transmission, it will cause the NEXT TWO character codes to be combined. For example, \AS will cause the codes for A and S to be combined into the "wait" code or "AS".

See also: morse

● **PText** message (up to 128 characters)

v2.84

PBBS

default (blank)   All Units

This entry specifies the customized text sent with the initial PBBS (personal mailbox) sign-on message (when the PBBS is connected to by a remote station). Enter any combination of characters and spaces up to a maximum length of 128. Entering a single "%" will clear PTEXT. You should not have the ">" character in your PTEXT, as this is reserved by BBS systems for their prompt.

See also: pbbs

● **RBaud** n (n = 20 - 500)

default 45   KAM   RTTY

This command sets the default baud rate that may be used when entering RTTY operations. It also sets the baud rate used by PMODE if RTTY is specified as that parameter. Your favorite RTTY speed can be entered here as RBAUD, and when operating at any other speed, instant reconfiguration to RBAUD speed can be had by use of the Ctrl-C Ø command.

See also: pmode, rtty; Ctrl-C n in the Directives section

● **REconnec** call(VIA call 2, call 3...call 9)

immediate   All Units   Packet

This command may be used to change the path by which you are currently connected to another station. It may only be used when you are connected on the current stream to the station you wish to reconnect to, or while attempting to connect to a station.

- CAUTION -

Packets enroute between your station and the reconnected station may be lost at the time the reconnect is executed.

See also: connect

● **REDisplay** n (n = $00 - $FF)

default $12 (Ctrl-R)   All Units   All Modes Except Wefax

This command is used to change the REDISPLAY-packet input editing character. The parameter n is the ASCII code for the character you want to type in order to REDISPLAY the packet currently being entered.

You can type this character to cause the TNC to redisplay the packet you have begun. When you type the REDISPLAY-packet character, the following things happen: First, type-in flow control is released (if FLOW was enabled). This displays any incoming packets that are pending. Then a \ (backslash) character is displayed, and the packet you have begun is redisplayed on the next line. If you have deleted and retyped any character, only the final form of the packet will be shown. You are now ready to continue typing where you left off. Incoming packets will continue to be displayed until you type the next character to be inserted into the packet.

You can use the REDISPLAY-packet character to see a "clean" copy of your input if you are using a printing terminal (or have BKONDEL OFF) and you have deleted characters. The REDISPLAYed packet will show the corrected text.

You can also use this character if you are typing a message in Convers Mode and a packet comes in. You can see the incoming message before you send your packet, without cancelling your input.

In non-packet modes you can use this character to see what characters are still in your transmit buffer.

See also: bkondel, canline, canpac, flow

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● **RELink** ON | OFF   v2.8
default OFF   KPC-1/KPC-2/KPC-2400   Packet
default OFF/OFF   KAM/KPC-4   Packet

When OFF, the TNC operating with AX25L2V2 ON does not attempt to automatically reconnect. When ON, the TNC operating with AX25L2V2 ON will attempt to automatically reconnect after RETRY is exceeded.

The KA-NODE and the PBBS will never attempt to reconnect regardless of the setting of this command. If using AX.25 Level 2 Version 1 (AX25L2V2 OFF) this command has no effect.

See also: ax25l2v2, retry, tries

● **REPhase** ON | OFF   v3.0
default ON   KAM   AMTOR

When ON, the KAM will automatically attempt to rephase with the other station if repeated errors occur. When OFF, repeated errors will cause the KAM to return to AMTOR standby mode.

● **RESet**
immediate   All Units

This command is used to perform a soft reset. Any parameters changed but not PERMed are retained. What is in the mailbox (PBBS) is kept, and the NDHEARD and MHEARD logs are not cleared. In the KAM, NAVTEX message numbers which have been correctly received, are not cleared. Any existing connections will not be recognized by your TNC even though the other end still believes it is connected to you. The initial sign-on message will be displayed.

See also: intface, maxusers, numnodes, pbbs, pmode, port, restore

● **RESPtime** n (n = 0 - 255)
default 5   KPC-1/KPC-2/KPC-2400   Packet
default 5/5   KAM/KPC-4   Packet

The number specified establishes a minimum delay, in 100ms increments, that is imposed on acknowledgment of information-bearing packets (I-frames). Delay may run concurrently with DWAIT (PERSIST and SLOTTIME) and any other random delays in effect. This command is useful in avoiding collisions during such activity as file transfers using full-length packets. This timer is suspended whenever PTT or carrier detect is present if operating half-duplex.

See also: frack

COMMANDS 39

● **RESTORE**   [Default]
immediate   All Units

When RESTORE is given without any arguments, the TNC will read all parameters from the EEPROM and then perform a soft reset. This returns the TNC to the parameters you last PERMed, even if you have Battery Backup or SmartWatch installed. RESTORE will set the ABAUD to the value PERMed in the EEPROM and immediately switch to that baud rate. If the last PERMed value for the PBBS is large enough to accept all messages in your mailbox, then no messages will be lost by performing the RESTORE command. If the command RESTORE D is given, the TNC will revert to factory default settings, ask for your callsign, and then perform a soft reset. The ABAUD parameter will be set to 0 but the unit will not perform the autobaud routine. These settings are not PERMed, so turning the unit OFF and then ON will return you to the EEPROM values or, if Battery Backup/SmartWatch is installed, to the RAM values.

See also: perm, reset

● **RETry**   n   (n = 0 - 15)
default 10   KPC-1/KPC-2/KPC-2400   Packet
default 10/10   KAM/KPC-4   Packet

This command specifies the number of packet retries. Packets are re-transmitted n times before the operation is aborted. The time between retries is specified by the command FRACK.

See also: ax25l2v2, frack, relink, tries

● **RIng**   ON|OFF
default ON   All Units   Packet

When ON, three bell characters ($07) are sent to the terminal with each "*** CONNECTED TO" message when another station initiates the connect.

● **RNrtime**   n   (n = 0 - 255)   v2.85
default 0   All Units   Packet/KA-NODE/PBBS

RNRTIME is set in 10 second increments. If a connection stays in a remote device busy state (continues to receive RNR frames) for RNRTIME, the TNC will disconnect. If a KA-NODE connection stays in a remote device busy for RNRTIME the KA-NODE will disconnect the input and output sides of the KA-NODE circuit. Setting RNRTIME to 0 disables this function.

See also: mresp

● **Rtty**   [n]   (n = 20 - 500)
immediate   KAM   RTTY

This command places the TNC in RTTY Mode. The parameter n sets the transceiver baud rate. If n is not specified, the baud rate specified in RBAUD is used.

See also: autostrt, canline, pmode, rbaud

● **SCreenl** n (n = 0 - 255)

default 0   All Units   All Modes

This value is used to properly format what is sent to your terminal. A <CR> sequence is sent to the terminal at the end of a line when n characters have been printed. A value of zero inhibits this action.

See also: autolf

● **SEndpac** n (n = $00 - $FF)

default $0D   All Units   Packet

This command specifies a character that will force a packet to be sent in Convers Mode. In the Convers Mode, packets are sent when the SENDPAC character is entered or when PACLEN is achieved.

See also: cpactime, cr

● **SHift** n (n = 170, 425, 850 or Modem)

default 170   KAM   All Modes Except CW

This command sets the default shift used in non-CW modes. When Modem is specified, the MARK and SPACE commands set the mark and space frequencies used. The Modem tones are always selected for packet operation. Once you have entered a non-packet mode, Ctrl-C S can be used to change shifts without affecting the SHIFT parameter.

See also: mark, space

● **SLottime** n (n = 0 - 255)   v2.70

default 10   KPC-1/KPC-2/KPC-2400   Packet
default 5/10   KAM   Packet
default 10/10   KPC-4   Packet

n specifies the amount of time, in 10 millisecond increments, between successive tries of the persistence algorithm.

See also: persist

● **SPace** n (n = 50 - 4000)

default 1800   KAM   All Modes Except CW

This command sets the space frequency used when the SHIFT command is set to Modem, or in the packet mode. It also controls the bargraph space frequency indication.

See also: shift

● **STARt** n (n = $00 - $FF)

default $11 (Ctrl-Q)   All Units   All Modes

This command specifies the character sent by the computer to the TNC to restart input from the TNC. If set to $00 only hardware flow control will be used. For software flow control, set this parameter to the character the computer will send to restart data flow.

See also: stop, xflow, xoff, xon

● **STATShrt** ON | OFF

default ON   All Units   Packet

If ON, entry of the STATUS command will display only the current I/O stream and any other streams having a connected status. If OFF, entry of the STATUS command will display all streams allowed by MAXUSERS, PBBS and NUMNODES.

See also: status

● **Status**

immediate   All Units   Packet

This command will display both the identifier and link state of all allowed streams. If STATSHRT is ON only active streams will be displayed. The current input and output (IO) stream is also indicated. A pound sign (#) indicates that there is unacknowledged data in the buffers for that stream. The following is an example of a display which may result from entry of the STATUS command, with NUMNODES set to 2, MAXUSERS 10, and STATSHRT OFF.

```
cmd: Stat
A      stream -   IO    CONNECTED TO WØXI
B      stream -         CONNECTED TO NØAPJ
C      stream -         DISCONNECTED
.............
.............
I      stream -         CONNECTED TO NØAL VIA LAW
J      stream -         #CONNECTED TO KEØH
Ain    DISCONNECTED
Aout   DISCONNECTED
Bin    DISCONNECTED
Bout   DISCONNECTED
```

See also: maxusers, numnodes, pbbs, statshrt, streamsw

● **STOp** n   (n = $00 - $FF)

default $13 (Ctrl-S)   All Units   All Modes

This command specifies the character sent by the computer to the TNC to stop input from the TNC. If set to $00 only hardware flow control will be used. For software flow control set this parameter to the character the computer will send to stop data flow.

See also: start, xflow, xoff, xon

● **STREAMCa** ON | OFF

default OFF   All Units   Packet

When monitoring packets addressed only to you, setting this command ON will enable the display of the callsign of the connected-to station following the stream identifier of the connection (controlled by STREAMEV). This is especially useful when operating with multiple connections allowed.

See also: mcon, monitor, streamev

● **STREAMEv** ON I OFF

default OFF   All Units   Packet

When OFF, the stream indicator is displayed only when a change in streams occurs. When ON, the stream indicator will be displayed with every incoming packet. This command takes effect when monitoring only those packets addressed to you.

See also: mcon, monitor, streamca, streamsw

● **STReamsw** n   (n = $00 - $FF)

default $7C (I)   KPC-1/KPC-2/KPC-2400   Packet
default $7E/$7C (~/ I)   KAM   Packet
default $7C/$7E (I /~)   KPC-4   Packet

This command selects the character(s) to be used to signify that a new "stream" or connection channel is being addressed. To change streams you must type the streamswitch character followed immediately by the stream designator. The stream designator is an alphabetic character A through Z limited by the value of MAXUSERS.

If STREAMSW is set to a dollar sign ($24) you will need to enter numerical code type parameter values in decimal. Or precede the $ with the PASS character in order to enter hex numbers.

The character selected can be PASSed in the Convers Mode by using a special PASS character, and will always be passed as data in the Transparent Mode. If operating in the Transparent Mode and you wish to change streams, you must first return to the Command Mode.

See also: maxusers, pass, status

● **SUPCalls** [+ I -]callsigns or NONE

default NONE   All Units   Packet

A list of up to 10 callsigns for use with SUPLIST or LLIST. To delete or add individual entries precede the callsign with a "-" or "+" respectively. For example to delete WDØEMR type SUPC -WDØEMR.

See also: llist, suplist

● **SUplist** OFF(NO,NONE) I TO I FROM I BOTH(ON,YES)

default OFF   All Units   Packet

When OFF, SUPLIST will allow monitoring of all eligible packets (according to other monitor commands) even if the SUPCALLS list has callsigns in it. When BOTH or ON, packets addressed to or from those stations whose calls are listed in the SUPCALLS will not be monitored. If SUPLIST is TO, only those packets addressed to a station in the SUPCALLS list will not be monitored, those from that station will be monitored. When set to FROM, those packets from the stations in SUPCALLS will not be monitored, but those packets addressed to the stations in the SUPCALLS list will be monitored. Note that SUPLIST takes precedence over BUDLIST. For instance if you have WØABC in your SUPCALLS with SUPLIST TO, and you have WØDEF in your BUDCALLS with BUDLIST BOTH, then packets from WØDEF to WØABC will NOT be monitored.

See also: monitor, supcalls

● **SWDETLed** ON | OFF

default OFF   KPC-1   Packet

*** DO NOT turn ON this command unless you have completed the SWDETLED Modification as detailed in the Installation Manual.***

When ON, (BE SURE YOU HAVE DONE THE REQUIRED HARDWARE MODIFICATION) the RCV LED will light to indicate that carrier is being detected by the software carrier detect routine. When OFF, the RCV LED will not light under any circumstance.

See also: cd

● **SWp** u,d,t   v3.0

default 17,17,108   KPC-1/KPC-2/KPC-2400

default 25,8,70/17,17,108   KAM

default 17,17,108/17,17,108   KPC-4

This command sets the parameters used by the TNC for software carrier detect. The first number (u) is used to increment a counter when a valid mark/space or space/mark transition occurs in the received signal (i.e. transition occurs at the beginning of a bit time). The second number (d) is a penalty subtracted from the counter when a transition occurs in the middle of a bit time. The t value is the threshhold value – when the counter total reaches this value, the carrier detect will be set true. Once carrier detect is active, the counter must drop to 0 before carrier detect is again made false.

See also: cd

● **TRACe** ON | OFF

default OFF   All Units   Packet

When ON, all received frames are displayed in their entirety, in hexadecimal, including all header information. All packets which are also eligible for monitoring will be displayed in normal text.

● **Trans**

immediate   All Units   Packet

This command causes immediate exit from Command Mode into Transparent Mode. The current link state is not affected. The 8th bit is sent out as received from the terminal, no matter how 8BITCONV and PARITY are set. Parity settings in the sending and receiving computers should be set the same for meaningful communications. There are no special editing characters, all characters are sent out as received. To get out of Transparent, send the TNC a modem break, or see CMDTIME for a special sequence. This mode is effective for file transfers, but would not normally be used for chit-chat.

See also: cmdtime

● **TRFlow** ON|OFF

default OFF   All Units   Packet

This command allows the TNC to respond to software flow control from the computer while in the Transparent Mode. When TRFLOW is OFF, software flow control is not used in the Transparent Mode. Hardware flow control will be expected from the computer by the TNC. The computer program needs to use hardware flow control, and the RS-232 cable needs to be wired with CTS and RTS connected. When ON, software flow control is enabled and the START and STOP characters are sent by the computer to the TNC to control the flow of data. When START and STOP are set to $00, hardware flow control must be used. If not zero, the TNC will respond to the computer's START and STOP characters, and remain transparent to other characters from the terminal or computer.

When START and STOP are set for software flow control (normally Ctrl-Q and Ctrl-S) all characters can be received in Transparent Mode (including the START and STOP characters) by setting TRFLOW ON and TXFLOW OFF. You will not, however, be able to send the START and STOP characters, since the TNC will interpret them as flow control.

See also: trans, txflow, xflow

● **TRIes** [n] (n = 0 - 15)   v2.85

                               All Units   Packet

The TRIES command will display and optionally set the number of attempts which have been made to re-send a packet which failed to reach its destination. For instance, if RETRY is set to 10, TRIES will show how many attempts have already been made to pass the data. For example, if TRIES were to show 8, "TRIES 3" would reset the counter to make the TNC believe that it had only tried 3 times so far, thus allowing 7 more attempts before the RETRY limit is exceeded.

See also: retry

● **TXDAmtor** n (n = 0 - 9)

default 5   KAM   AMTOR

This command establishes the transmit key-up delay used in AMTOR operation. Each number increment sets a multiple of 10ms.

See also: amtor

● **TXdelay** n (n = 0 - 255)

default 30   KPC-1/KPC-2/KPC-2400   Packet
default 30/30   KAM/KPC-4   Packet

This command sets the transmitter key-up delay as 10*n ms. This setting establishes the time delay between the application of push-to-talk and AFSK data tones to the transmitter. Flags (character to begin packet) are sent during the delay. This command needs to be set long enough to give your transmitter time to come to full power before data is sent. If set too short the beginning of the packet will be chopped off and another station will never be able to decode you. If set too long additional flags at the beginning (heard as a repetitive sound) just wastes air time. It may be necessary to increase your TXDELAY to allow the receiving station sufficient time for his receiver to detect your signal (i.e. switch from transmit back to receive).

● **TXDFec**   n   (n = 0 - 25)   v3.0
default 0   KAM   FEC

This command sets the number of extra seconds that the KAM will send phasing
signals at the beginning of an FEC transmission. This allows more time for a station to
tune your FEC transmission and obtain a LOCK condition before you actually begin
transmitting data.

See also: fec

● **TXFlow**   ON I OFF
default OFF   All Units   Packet

This command allows the TNC to send software flow control (XON and XOFF) to stop
and restart the flow of data from the computer while in the Transparent Mode. When
TXFLOW is OFF, hardware flow control must be used between the computer and TNC.
RTS and CTS must be connected between the TNC and computer for hardware flow
control. When TXFLOW is ON, software flow control between the TNC and computer
in Transparent Mode will depend on the setting of XFLOW – XFLOW ON enables
software flow control, XFLOW OFF disables it. When software flow control is enabled,
the TNC will send the XON and XOFF characters to the computer to control data flow.

When set for software flow control, all characters can be sent in Transparent Mode
(including the XON and XOFF characters) by setting TXFLOW ON, XFLOW ON
and TRFLOW OFF. You will not, however, be able to receive the START and STOP
characters, since your terminal program should interpret them as flow control.

See also: trans, trflow, xflow

● **Unproto**   call 1 (VIA call 2, call 3....call 9)   I   [NONE]
default CQ   KPC-1/KPC-2/KPC-2400   Packet
default CQ/CQ   KAM/KPC-4   Packet

call 1 = destination address (this is really just a "dummy" address, as no connection
takes place, people often put their name or CQ here)

call 2 ... call 9 = optional stations to be digipeated through A maximum of 8 digipeat
addresses (callsigns or aliases) can be specified. This is referred to as a path.

Each callsign may also have an optional supplemental station identifier (SSID)
specified as -n, where n = 1 - 15. The digipeat callsigns are specified in the order in
which they are to relay transmitted packets. This command is used to set the digipeat
and destination address fields for packets sent in the unconnected (unprotocol) mode.
Unproto packets do not receive an acknowledgment and are not retried. They are sent
as Unsequenced I-frames <UI>. The digipeater list is also used for BEACON and ID
packets. If UNPROTO is "NONE", no unconnected packets will be sent except for
BEACON and ID. Unconnected packets sent from other units can be monitored by
setting MONITOR ON.

See also: alias, beacon, id, monitor, mrpt, xmitok

● **USers** n   (n = 0 - 26)

default 1	KPC-1/KPC-2/KPC-2400	Packet
default 1/1	KAM/KPC-4	Packet

This command specifies the channels (streams) which may be available to incoming connect requests. For example, if USERS = 5 then an incoming connect request will connect to the lowest channel A - E, if any of these channels are in the unconnected state. If none of the 5 channels are available (all of them are connected), a <DM> packet will be sent back to the requesting station and the message "*** connect request: (call)" will be output to your terminal, if permitted. If USERS is set to 0 no one will be able to connect to you. If USERS is set higher than MAXUSERS, the extra is ignored and the message "USERS LIMITED BY MAXUSERS" will be displayed.

See also: intface, maxusers, streamsw

● **USOs** ON | OFF

default ON   KAM   RTTY

When ON, an unshift to letters case is effected when a space is received in BAUDOT RTTY. If LCRTTY is ON, a space will cause an unshift to lower case.

● **Wefax** n   v2.8

immediate   All Units   WEFAX

This command permits the reception of Weather Facsimile. The audio input is sampled n times per second, and a black/white decision is made on each sample. Each sample becomes one bit of the data sent over the serial port to the computer. A special computer program must be used to display the WEFAX pictures.

See also: daytweak; WEFAX Reception section of Operations Manual

● **WText** message   (up to 128 characters)   v2.84

default (blank)   KAM   AMTOR

This entry specifies the text to be sent in response to a WRU command while in AMTOR (ARQ) Mode only. Enter any combination of characters and spaces up to a maximum length of 128. Entering a single "%" will clear WTEXT.

See also: Ctrl-W in the Directives section

● **Xflow** ON | OFF

default ON   All Units   All Modes

When ON software flow control will be implemented according to the settings of START, STOP, XON, XOFF. For normal software flow control set XFLOW ON, START $11, STOP $13, XON $11, XOFF, $13. The TNC expects the computer or terminal to respond to the flow control characters XON and XOFF, and the TNC responds to the START and STOP characters from the computer. When OFF the TNC will only use and recognize hardware flow control lines (CTS and RTS) to start or stop data. The RS-232 cable must be wired appropriately. If the software flow control characters are set to $00, software flow control is not possible.

In the Transparent Mode flow control is also determined by the settings of TRFLOW and TXFLOW.

See also: start, stop, trflow, txflow, xoff, xon

● **XMitecho** ON I OFF

default OFF   KAM   CW/RTTY/ASCII/AMTOR

When ON, characters are echoed when they are sent to the transceiver for output. When OFF, echo is immediate.

● **XMitok** ON I OFF

default ON   KPC-1/KPC-2/KPC-2400   All Modes

When ON, transmitting functions are enabled. If turned OFF, transmitting is inhibited while all other functions of the TNC are unchanged.

● **XOff** n (n = $00 - $FF)

default $13 (Ctrl-S)   All Units   All Modes

This command selects the character sent by the TNC to the computer to stop input from the computer. If set to $00 hardware flow control must be used. For software flow control set this parameter to the character the computer expects to see to stop sending data to the TNC.

See also: xflow, xon

● **XON** n (n = $00 - $FF)

default $11 (Ctrl-Q)   All Units   All Modes

This command selects the character sent by the TNC to the computer to restart input from that device. If set to $00 hardware flow control must be used. For software flow control set this parameter to the character the computer expects to see to restart sending data to the TNC.

See also: xflow, xoff

Directives

Ctrl-C Directives

The Ctrl-C part of these directives is established by the command COMMAND, if you have changed COMMAND then the commands will all begin with that character, and not a Ctrl-C. These control commands are used within non-packet operating modes to direct the KAM to take specific actions. In all cases you issue a Ctrl-C command by pressing the Ctrl key and while holding it down type the letter "C" (this can be capital or lower case, but will be shown as capital). Release both, then press the letter indicated to obtain the desired action (this letter can also be capital or lower case, but will be shown as capital). If your computer keyboard has no key labeled Ctrl, consult your computer manual to determine which key performs the control key function. Or change the COMMAND parameter to what you would like to use.

● Ctrl-C

All Units   All Modes

Default for the COMMAND character. If the COMMAND character is changed substitute the new character in place of Ctrl-C in all of the following directives. When in packet or wefax, this character allows you to return to Command Mode. Packet Transparent Mode uses a special sequence, see CMDTIME under Commands. See Ctrl-C X for other modes.

See also: command in the Commands section.

● Ctrl-C n (n = 0 - 9)

KAM   CW/RTTY/ASCII

n changes speed as follows:

n	RTTY/ASCII	CW		n	RTTY/ASCII	CW
1	45	5		6	110	30
2	50	10		7	150	35
3	57	15		8	200	40
4	75	20		9	300	45
5	100	25		0	rbaud/ascbaud	50

See also: ascbaud, rbaud in the Commands section

● Ctrl-C E

KAM   CW/RTTY/ASCII/AMTOR

Return to receive when transmit buffer empty.

● Ctrl-C I

KAM   RTTY/ASCII/AMTOR

Invert received signal (toggle inversion).

See also: invert in the Commands section

● **Ctrl-C L**   the xmit lock directive   <div style="text-align:right">v2.84</div>

<div style="text-align:center">KAM</div>   <div style="text-align:right">CW</div>

Entering this combination during CW operation will cause the CW transmit speed to be set to the receive speed at that moment. The directive also disables autotracking of received CW speed. See Ctrl-C U to unlock receive speed and enable autotrack.

● **Ctrl-C R**

<div style="text-align:center">KAM</div>   <div style="text-align:right">CW/RTTY/ASCII/AMTOR</div>

Return to receive immediately – even if data remains in transmit buffer. In CW Mode this directive also re-enables speed tracking.

● **Ctrl-C S**

<div style="text-align:center">KAM</div>   <div style="text-align:right">RTTY/ASCII/AMTOR</div>

Change shift to next standard. Standard shifts are 170, 425 and 850.

See also: shift in the Commands section.

● **Ctrl-C T**

<div style="text-align:center">KAM</div>   <div style="text-align:right">CW/RTTY/ASCII/AMTOR</div>

Switch from receive to transmit or seize the ISS status in AMTOR.

● **Ctrl-C U**   the xmit unlock directive   <div style="text-align:right">v2.84</div>

<div style="text-align:center">KAM</div>   <div style="text-align:right">CW</div>

Entering this combination during CW operation will unlock the receive speed to allow tracking of the incoming signal. Transmit speed will stay at current setting.

● **Ctrl-C X**

<div style="text-align:center">KAM</div>   <div style="text-align:right">CW/RTTY/ASCII/AMTOR</div>

Return to Command Mode.

● **Ctrl-L**

<div style="text-align:center">KAM</div>   <div style="text-align:right">RTTY/AMTOR</div>

Send RTTY or AMTOR letter shift character.

● **Ctrl-N**

<div style="text-align:center">KAM</div>   <div style="text-align:right">RTTY/AMTOR</div>

Send RTTY or AMTOR figure shift character.

● **Ctrl-W**

<div style="text-align:center">KAM</div>   <div style="text-align:right">AMTOR</div>

Sends special WRU sequence.

See also: wtext in the Commands section

KA-NODE and PBBS Directives

These directives are issued by a remote station. After connecting to a KA-NODE or PBBS and receiving the ENTER COMMAND: message, one would then issue these commands from his Convers Mode.

● **ABORT**   v2.85
                              All Units   KA-NODE

This command will abort a KA-NODE CONNECT or XCONNECT request if it is the first data sent after the request. It must be spelled out entirely but is not case sensitive.

● **Bye**   v2.8
                              All Units   KA-NODE/PBBS

This command will cause the KA-NODE or PBBS to initiate a disconnect.

● **Connect**   callsign [stay]   v2.8
                              All Units   KA-NODE

This command will cause the KA-NODE to issue a connect request to "callsign" in the usual AX.25 mode. If the connect is successful, a link will be made to the next node or end-user station. If the STAY option is given, a disconnect issued from the distant end (OUT side of the KA-NODE) would cause the KA-NODE to stay connected to the originating station (IN side of the KA-NODE).

● **Help**   v2.84
                              All Units   KA-NODE/PBBS

HELP is a command that can be sent to a KA-NODE or PBBS. When a connect to a KA-NODE or PBBS is successful, a list of command abbreviations will be delivered to the connecting station. For example, the following shows the initial connected to message and the response from the HELP command sent from a KA-NODE:

```
###CONNECTED TO NODE mynode (mycall of node) CHANNEL A
ENTER COMMAND: B,C,J,N,X, or Help
?H
ABORT            STOP A CONNECTION IN PROGRESS
B(ye)            NODE WILL DISCONNECT
C(onnect) call   CONNECT TO callsign
C call S(tay)    STAY CONNECTED TO NODE WHEN END DISCONNECTS
J(heard)         CALLSIGNS WITH DAYSTAMP
J S(hort)        HEARD CALLSIGNS ONLY
J L(ong)         CALLSIGNS WITH DAYSTAMP AND VIAS
N(odes)          HEARD NODE CALLSIGNS WITH DAYSTAMP
N S(hort)        NODE CALLSIGNS ONLY
N L(ong)         NODE CALLSIGNS WITH DAYSTAMP AND VIAS
X(connect) call  CONNECT TO callsign ON OTHER PORT
X call S(tay)    STAY CONNECTED WHEN END DISCONNECTS
ENTER COMMAND: B,C,J,N,X, or Help
?
```

● **Jheard** [S | L]   v2.84

<div align="center">All Units   KA-NODE/PBBS</div>

This command will cause the KA-NODE or PBBS to transmit its MHEARD log. If the S option is selected, only the callsigns of the log are transmitted. If the L option is selected, then the total path stored in the MHEARD log of the other station is passed to you, including VIA paths. (Paths will, of course, be provided only by Kantronics TNCs at or above level 2.84.)

See also: mheard in Commands section

● **List**   v2.7

<div align="center">All Units   PBBS</div>

This command lists all mail in the mailbox addressed to your callsign or to ALL.

● **LM**   v2.85

<div align="center">All Units   PBBS</div>

List Mine lists all mail addressed to you.

● **KM**   v2.85

<div align="center">All Units   PBBS</div>

Kill Mine kills all mail addressed to you.

● **RM**   v2.85

<div align="center">All Units   PBBS</div>

Read Mine reads all mail addressed to you.

● **Read** n (n = message number)   v2.7

<div align="center">All Units   PBBS</div>

This command allows you to read a specific message in the mailbox. You may need to do a List command in order to get the specific number.

● **Send** callsign   v2.7

<div align="center">All Units   PBBS</div>

This command is used to send a message to a PBBS. Following is an example with the information you would type in bold and the responses from the PBBS in light.

ENTER COMMAND: B,J,K #,KM,L,LM,R #,RM,S, or Help
>
s WK5M
SUBJECT:
short subject line
ENTER YOUR MESSAGE -- END WITH CTRL-Z OR /EX ON A SINGLE LINE
Content of message is entered here
/EX
MESSAGE SAVED.
ENTER COMMAND: B,J,K #,KM,L,LM,R #,RM,S, or Help
>

● **Nodes** [S|L]   v2.84
<div align="center">All Units</div>   KA-NODE

This command will cause the connected to KA-NODE to return a list of nodes heard,
including KA-NODEs, TheNet, and NET/ROM nodes. If you are connected to a second
KA-NODE through an intermediate KA-NODE you will receive the nodes heard of the
second KA-NODE. If the S option is used, i.e. NODES S, then only the callsigns of the
stations heard will be displayed. If the L option is used, all callsigns contained in the
received packet are displayed.

See also: ndheard in the Commands section

● **XConnect** callsign   v2.8
<div align="center">KAM/KPC-4</div>   KA-NODE

This command will cause the KA-NODE to issue a connect request to "callsign" in the
usual AX.25 format from the KA-NODE but uses the other radio port of the node.
Cross-connecting enables you to gain access via the node to another frequency.

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Messages From the TNC

*** (callsign) busy
***DISCONNECTED
> The packet station you were attempting to connect to (callsign) is unable to accept connects.

Already connected on stream
> You are attempting to connect to someone you are already connected to on another stream. The STATUS command will show you who you are connected to and on what stream.

CALIBRATE MODE: PRESS R, T, OR X
> This message appears on your screen when you enter the Calibrate Mode and prompts you to press R for receive T for transmit and X for exit back to Command Mode.

cmd:
> This is the Command Mode's prompt for input. Any characters entered after the TNC prints "cmd:" will be used as command input and not packet data.

Can't CONNECT
Already connected on stream x
> You cannot CONNECT to the same station on two different streams. Use the STATUS command to see who is connected.

Can't DISCONNECT
> You are not connected on this stream so therefore cannot disconnect. This message will be followed by the stream and a "Link state is:" message, described under "Link state is:" later in this section.

Can't RECONNECT
Already connected on stream x
> The station you are trying to RECONNECT to is on a different streams. Use the STATUS command to see who is connected.

***connect request
> A remote packet station has attempted to connect to you, but there is not a valid stream available for the connection to be entered on. The remote station will be sent a busy message, <DM> packet. See the USERS and MAXUSERS command for setting more streams and allowing more connects at one time if desired. Also be sure CONOK is ON.

*** CONNECTED TO CALL 1 [VIA call2....call9]
> A packet connection has taken place. This can happen by you issueing a connect request or a connect request coming in from a remote station. CALL will be the callsign entered in the remote stations MYCALL and if a path was used it will be shown.

Device busy
> The TNC is not able to accept further data packets from the radio for the time being. An RNR (Receiver Not Ready) has been sent.

*** DISCONNECTED
> The packet connection no longer exists.

DISCONNECT in progress

A disconnect packet has already been issued. Connects are not valid in this state, and a second DISCONNECT command will cause a "retry count exceeded" condition.

EH?

This is the TNC's generalized "I don't understand" message. A dollar sign ($) is used to point to the offending character. It will also appear if a required input item is missing, e.g.:

C KV7B V
          $

EH?

In this example, the required callsign after the VIA option is missing. Most commands that receive an EH? error are ignored. In a few cases, part of the command may be accepted and acted upon, as described under the message "Input ignored".

Enter Proper MYSelcal

Reminds you to enter the proper parameter prior to commanding a mode of operation which requires it.

ENTER YOUR CALLSIGN=>

Type in your callsign. The TNC needs to know who you are to properly implement its protocol. Your callsign will be placed in the MYALIAS, MYCALL, MYGATE, MYNODE, and MYPBBS commands. To properly implement these different functions you will need to change each command to a different call by using using up to six alphanumerical characters and a substation id (SSID), if desired. See the Commands section for further details about parameters of the callsign type and the specific commands listed above.

EEPROM BURN ERROR

The information written into the EEPROM by the PERM command did not verify properly.

EEPROM OVERFLOW

The EEPROM cannot store all of the data. This is normally caused by large amounts of text stored in the text type parameters (BTEXT, CTEXT, NTEXT, PTEXT, WTEXT).

EXTERNAL MODEM CAN ONLY BE USED IN VHF-ONLY MODE

The particular optional modem installed inside the KAM unit can only be used when the HF value of MAXUSERS is set to zero.

EXTERNAL MODEM NOT SUPPORTED BY THIS SOFTWARE

This version of TNC software does not support the particular optional modem installed inside the unit. Check with Kantronics on updates.

FRMR in progress

The TNC is connected but a protocol error has occurred. This is usually caused by two TNCs having the same callsign entered. An improper implementation of the AX.25 protocol could cause this state to be entered. The TNC will attempt to resynchronize frame numbers with the unit on the other end, although a disconnect may result. Connects are not valid in this state and a disconnect command will start the disconnect process.

*** FRMR received

A frame reject packet has been received for an unknown reason. The information field of this packet will display in hexadecimal value. This display may be useful in determining why the receiving station rejected your packet.

*** FRMR sent

Frame reject packet has been sent due to a detected error in protocol. Three bytes (6 hexadecimal characters) are displayed to assist in determining the reason for the reject.

Input ignored

Since the TNC command interpreter was kept small and simple, it will sometimes change parameters before it completes parsing some of the more involved commands. In some cases, options at the beginning of the command will have been acted on before a syntax error near the end of the line is reached. When this occurs, "Input ignored" is used to show what part of the line was ignored. The dollar sign points to the boundary: characters to the left were used; the character pointed to and those to the right were not, i.e., the line was parsed as if a (cr) was entered at the $.

Example:

BUDCalls QST,WB9FLW K9NG
$

Input ignored

Because the comma is missing, the command is interpreted as if it were BUDCALLS QST,WB9FLW; the K9NG is ignored.

INVALID STREAM

The stream you have tried to change to is not valid. Stream designators must be letters A - Z. MAXUSERS sets the upper limit on valid streams. The setting of LCSTREAM determines if lower-case characters are permitted when switching streams.

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This message appears when the KAM is first turned on and after any soft reset, including changing the NUMNODES, PBBS, and MAXUSERS values or using the RESET ccommand.

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This message appears when the KPC-4 is first turned on and after any soft reset, including changing the NUMNODES, PBBS, and MAXUSERS values or using the RESET ccommand.

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This message appears when the KPC-1 is first turned on and after any soft reset, including changing the NUMNODES, PBBS, and MAXUSERS values or using the RESET ccommand.

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> This message appears when the KPC-2 is first turned on and after any soft reset, including changing the NUMNODES, PBBS, and MAXUSERS values or using the RESET ccommand.

KANTRONICS PACKET COMMUNICATOR 2400 Vx.xx
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> This message appears when the KPC-2400 is first turned on and after any soft reset, including changing the NUMNODES, PBBS, and MAXUSERS values or using the RESET ccommand.

Link state is:

> This message is output in response to the CONNECT, DISCONNECT, and RECONNECT commands if the state of the link does not permit the requested action. It is prefaced by "Can't CONNECT" or "Can't DISCONNECT" or "Can't RECONNECT" as appropriate and will be followed by the current link state. A CONNECT command with no options will display the current link state.

> Current link states are:

Both devices busy

> Both TNCs involved in the connection are unable to accept any more data.

CONNECTED to (callsign v path)

> Your TNC is currently connected to the indicated station, using the path given.

CONNECT in progress

> Your TNC is attempting to establish a connection.

Device busy

> Your TNC is unable to accept any more data from the remote station at this time.

DISC in progress

> Your TNC is attempting to disconnect from another station.

DISCONNECTED

> No connection exists on the current stream.

FRMR in progress

> Your TNC has detected an error in the protocol. This is normally caused by two TNCs using the same callsign, resulting in both of them trying to respond to the same message.

REJ frame sent

> Your TNC has rejected a packet sent by another TNC. This may be caused by a frame being received twice, or by a frame being received out of sequence.

REJ sent and device busy

> Your TNC has rejected a packet sent by another TNC, and it is also unable to receive any more data from the remote station at this time.

REJ sent and remote busy

> Your TNC has rejected a packet sent by another station, and the other station is unable to accept any more data from you.

REJ sent and both devices busy

Your TNC has rejected a packet sent by another station, and both your TNC and the remote stations' TNC are unable to accept any more data.

Remote device busy

The remote TNC is unable to receive any more data from the radio at this time.

Waiting ACK and device busy

Your TNC has sent a packet to another station and is waiting for the acknowledgment, but your TNC is not able to accept any data from the radio at this time.

Waiting ACK and remote busy

Your TNC has sent a packet to another station and is waiting for the acknowledgment, and the remote TNC is not able to accept any data from the radio at this time.

Waiting ACK and both devices busy

Your TNC has sent a packet to another station and is waiting for the acknowledgment, but neither your TNC nor the other stations TNC is able to accept any data from the radio at this time.

Waiting acknowledgment

You have sent a packet of data to another station, and your TNC is waiting for the acknowledgment.

msg:

This is the PBBS prompt for input. Any characters entered after the TNC prints "msg:" will be used as part of the PBBS message being entered. Entering a "/EX" or Ctrl-Z, on a separate line, will end the messageand return to cmd:.

MESSAGE DELETED

This tells you that the message you requested to be killed with the PBKILL command has been deleted.

MESSAGE TOO BIG

The message you attempted to enter into the PBBS was too big and has been truncated.??? NUMNODES sets how big the PBBS message area is.

NO KNOWN NODES

An NDHEARD list has been requested and the KA-NODE does not know of any nodes.

Not while connected

Some parameters cannot be changed if the TNC is connected to another station. This message is printed if an attempt is made.

PBBS BUSY

This is the TNC response to a connect request when it is already connected to.

PBBS NOT ENABLED

This is the TNC response to a PBList, PBRead, PBKill or PBSend command if the PBBS has not been enabled by allocation of RAM.

See: PBBS command in command section

PRESS (*) TO SET BAUD RATE

You need to press the asterick key on your keyboard. The TNC's autobaud routine will then detect what baud rate your computer is talking at so the two devices can communicate. The baud rate for the TNC may be set with the ABAUD command described in the Commands section to avoid going through this routine everytime the TNC is turned on.

REJ frame sent

A reject packet has been sent in response to a packet received out of proper sequence.

***retry count exceeded
***DISCONNECTED

The number of tries set by the RETRY command has been exceeded. Therefore the connection has been broken.

Set MAXUSERS to 0/n

An attempt has been made to enter the WEFAX Mode without setting MAXUSERS to 0/n.

TOO MANY USERS

You have attempted to set MAXUSERS to a number too large. MAXUSERS may never be more than 26 for any one port. The amount of RAM you have designated for PBBS and KA-NODE will also limit the amount of RAM available for MAXUSERS.

USERS LIMITED BY MAXUSERS

You have attempted to set USERS to a number greater than MAXUSERS. The actual number of users allowed is limited by MAXUSERS.

Value out of range

If the syntax of the command is legal, but the value specified is too large or too small for this command, the value out of range message is used. A $ is used to point to the bad value.

Waiting acknowledgment

The time specified by FRACK has been exceeded without a proper acknowledgment for a packet sent. A retry sequence is in progress.

was

Whenever one of the parameters is changed, the previous value is displayed.
Example:
cmd:AX25 OFF
    was ON/ON

ASCII Chart

Ctrl	Dec	Hex	Code	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex
@	0	00	NUL	32	20	SP	64	40	@	96	60	`	128	80	160	A0	192	C0	224	E0
A	1	01	SOH	33	21	!	65	41	A	97	61	a	129	81	161	A1	193	C1	225	E1
B	2	02	STX	34	22	"	66	42	B	98	62	b	130	82	162	A2	194	C2	226	E2
C	3	03	ETX	35	23	#	67	43	C	99	63	c	131	83	163	A3	195	C3	227	E3
D	4	04	EOT	36	24	$	68	44	D	100	64	d	132	84	164	A4	196	C4	228	E4
E	5	05	ENQ	37	25	%	69	45	E	101	65	e	133	85	165	A5	197	C5	229	E5
F	6	06	ACK	38	26	&	70	46	F	102	66	f	134	86	166	A6	198	C6	230	E6
G	7	07	BEL	39	27	'	71	47	G	103	67	g	135	87	167	A7	199	C7	230	E7
H	8	08	BS	40	28	(	72	48	H	104	68	h	136	88	168	A8	200	C8	232	E8
I	9	09	HT	41	29	)	73	49	I	105	69	i	137	89	169	A9	201	C9	233	E9
J	10	0A	LF	42	2A	*	74	4A	J	106	6A	j	138	8A	170	AA	202	CA	234	EA
K	11	0B	VT	43	2B	+	75	4B	K	107	6B	k	139	8B	171	AB	203	CB	235	EB
L	12	0C	FF	44	2C	,	76	4C	L	108	6C	l	140	8C	172	AC	204	CC	236	EC
M	13	0D	CR	45	2D	-	77	4D	M	109	6D	m	141	8D	173	AD	205	CD	237	ED
N	14	0E	SO	46	2E	.	78	4E	N	110	6E	n	142	8E	174	AE	206	CE	238	EE
O	15	0F	SI	47	2F	/	79	4F	O	111	6F	o	143	8F	175	AF	207	CF	239	EF
P	16	10	DLE	48	30	0	80	50	P	112	70	p	144	90	176	B0	208	D0	240	F0
Q	17	11	DC1	49	31	1	81	51	Q	113	71	q	145	91	177	B1	209	D1	241	F1
R	18	12	DC2	50	32	2	82	52	R	114	72	r	146	92	178	B2	210	D2	242	F2
S	19	13	DC3	51	33	3	83	53	S	115	73	s	147	93	179	B3	211	D3	243	F3
T	20	14	DC4	52	34	4	84	54	T	116	74	t	148	94	180	B4	212	D4	244	F4
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Z	26	1A	SUB	58	3A	:	90	5A	Z	123	7A	z	154	9A	186	BA	218	DA	250	FA
[	27	1B	ESC	59	3B	;	91	5B	[	124	7B	{	155	9B	187	BB	219	DB	251	FB
/	28	1C	FS	60	3C	<	92	5C	\	124	7C			156	9C	188	BC	220	DC	252	FC
]	29	1D	GS	61	3D	=	93	5D	]	125	7D	}	157	9D	189	BD	221	DD	253	FD
^	30	1E	RS	62	3E	>	94	5E	^	126	7E	~	158	9E	190	BE	222	DE	254	FE
_	31	1F	US	63	3F	?	95	5F	_	127	7F	DEL	159	9F	191	BF	223	DF	255	FF

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